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## LIGATURE AND SUTURE MATERIAL

### THE EMPLOYMENT OF FINE SILK IN PREFERENCE TO CATGUT AND THE ADVANTAGES OF TRANSFIXION OF TISSUES AND VESSELS IN CONTROL OF HEMORRHAGE

### ALSO AN ACCOUNT OF THE INTRODUCTION OF GLOVES, GUTTA-PERCHA TISSUE AND SILVER FOIL


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For a number of years I have had it in mind to call attention to the particular method of employing silk ligatures and sutures which has been practiced in the surgical clinic of the Johns Hopkins University since the opening of the Johns Hopkins Hospital in 1889, but have hesitated and also been eager to do so for the same reason, namely, that our school seems to be almost alone in its advocacy of the use of this material.

Theodor Kocher, however, has for many years employed silk quite to the exclusion of catgut and our position is greatly strengthened by the support of such eminent authority.

Surgeons, old and young, those who have been active and masterful in the marvelous period of development of antiseptic surgery, and the medical student who takes for granted the healing of wounds *per primam* and the achievements of modern surgery as he does the ability to speak his own tongue, will be interested to read the words of Kocher[1] spoken in 1888. "'Away with the spray!' cried Bruns[2] some years ago — Bruns who achieved so much and who died, alas, so early — and gladly did one cast off this burden. 'Away with protective!' exclaimed Starcke[3] in an admirable essay on the treatment of wounds. But with the elimination of spray and protective there are still many of the seemingly essential features of the antiseptic technic to be discarded before the physician in general practice can be placed in that happy state of mind which pertains to the consciousness of his ability to avoid making the famous seven errors of Nussbaum. The 'away' must resound still further, and we say, therefore, primarily, away with the catgut! and also: away with all the prepared gauzes, from the Lister gauze to the newest productions of the manufacturers of supplies for dressings.

"To what misfortunes catgut can give rise more than one communication in the medical journals of years ago has testified. In the first place von Zweifel called attention to the decomposition which took place when catgut was kept in phenolized oil as recommended by Lister. Other surgeons have confirmed the observations that one may infect wounds directly with catgut preserved in the manner mentioned and we also have at one time published the case of a woman whose death after the excision of a struma sarcomatosa was attributable to the employment of catgut which had decomposed in the phenolized oil."

Kocher proceeds to relate the disastrous experience he had with catgut from May to July, 1887. Of thirty-one operations performed in a period of seven weeks, serious infection of the wound occurred in twenty-nine.

In one of the two non-infected cases silk was employed. Hence in this particular "catgut period" only one operative wound, a small one in which were very few ligatures, healed *per primam*. Catgut being totally discarded and silk reinstated, the infections ceased. From that time until the present, except possibly for brief periods of experimentation with catgut, Professor Kocher has, I believe, employed silk. I have not heard him state his reasons for preferring silk in these days when catgut may be perfectly sterilized, but that they are sound we may be sure. I can testify to the admirable healing of his wounds.

Our method of employing silk differs quite essentially from Professor Kocher's. The silk which we use is much finer than his and we rely on transfixion to prevent the ligature from slipping.

I am unable to say precisely when it was that I definitely substituted silk for catgut. It must have been earlier than 1883, for in that year or in 1882 Warmbrum Quilitz & Co. of Berlin made for me, in glass, bobbins of my designing, to be held in the left hand of the operator during the act of ligating blood-vessels. A description and illustration of these spools is given in the Johns Hopkins Hospital Reports.[4] I have employed them continuously from the time of their introduction to the present. When the operator desires to tie a vessel without tissue-transfixion he is handed a spool—not a thread cut to the length desired for a ligature. With the right hand the silk is unwound, as required, from the spool held loosely in the left. Only two or three yards are wound on each spool, but enough for the tying off of many arteries; and for each operation the silk employed is sterilized only once. The armed glass spools are steamed in heavy glass test-tubes (Fig. 1).

In the winter of 1886 and 1887, experimenting on the subject of intestinal suture[5] with Dr. Franklin B. Mall, I employed ordinary, fine black spool-silk as material for ligature and stitches. Black silk was selected in preference to white because it was easier to see it on the glass bobbins and in the fresh wound, and it was also

1. Kocher: Eine einfache Method zur Erzielung sicherer Asepsis, Corr.-Bl. f. schweiz. Aerzte, 1888, xviii.
2. Berl. klin. Wchnschr., 1880, No. 43.
3. Vortrag in der Berl. militärärztl. Gesellsch.
4. Johns Hopkins Hosp. Rep., March, 1891, ii, 306.
5. These experiments were conducted in the Pathological Laboratory of the Johns Hopkins Hospital. Am. Jour. Med. Sci., October, 1887, p. 456.

more readily identified in the healed wounds. The little black loops of the mattress or Lembert stitches made a striking picture after a time, lying more or less free under the peritoneum along the line of the intestinal suture.

The following winters 1887-1889, in my experiments on the thyroid gland, I employed exclusively the black silk, just as we do to-day and have done ever since the opening of the Johns Hopkins Hospital twenty-four years ago.

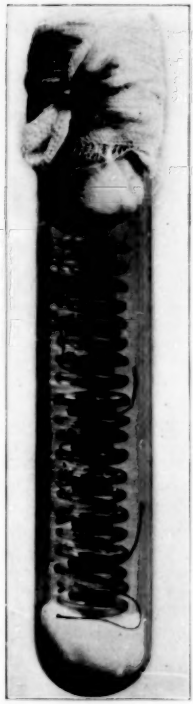

Fig. 1.—Ligature-spools of glass. A spool is held in the left hand while the right unwinds only so much of the thread as may be required for the ligation of one vessel.

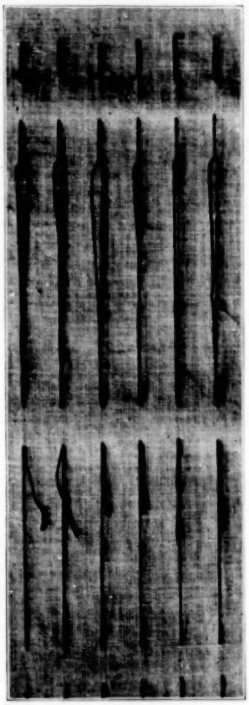

Fig. 2.—Reduced 3/5. To show method of basting the threaded needles. Silk No. 4. Needle No. 7. We usually employ silk two sizes finer than this.

The relatively high cost of catgut, its bulkiness, the inconveniences attending its use and sterilization, its inadequacy, the uncertainty as to the time required for its absorption, and the reaction which it excites in a wound, induced me to discard it completely for clean wounds in the surgery both of the human subject and of animals. From year to year and for various periods of time I have given the catgut, sterilized by the best known American purveyors of this material, a trial, but invariably with the results which we interpreted as being less perfect than with silk. Infection from pathogenic organisms can, of course, only rarely be ascribed, nowadays, directly to the catgut sterilized by our most reliable firms. With the fine silk in our wounds, which for twenty-three years have, as a rule, been closed without drainage, suppuration almost never occurs.[6] But catgut, even that which we have no cause to believe is not sterile, irritates the wound for some reason, perhaps because it serves as culture medium for saprophytic organisms which are carried into it from the deep epithelium and follicles of the skin.[7]

We have frequently observed this irritation and have occasionally had the opportunity to compare the reaction caused by catgut with that of fine silk in wounds symmetrically situated in the same patient and made at the same time.

Let the surgeon interested in making the comparison, when he has occasion to amputate both breasts for non-malignant disease, take a running subcuticular stitch on the one side with catgut, on the other with fine silk (No. A or AA) and observe the healing wounds from day to day; or when operating on two goiters on the same day, employ catgut for the platysma suture in the one case and very fine silk in the other. There is not only greater local reaction in the cases sewed with catgut but in them the wounds will occasionally open at one or more points to discharge a few drops of clear or cloudy fluid.

Wedded to the use of catgut, the operator develops, undoubtedly, a special technic which enables him to avoid procedures which would be likely to cause trouble or inconvenience, but on the other hand, he is deprived of very useful devices which become indispensable and a delight to the surgeon who has acquainted himself with the possibilities of silk threaded in the ordinary fine straight needle of commerce.

Straight needles of various sizes and lengths are threaded in great number with the silk corresponding in size, and are coarsely basted in rows into strips of thin muslin or gauze (Fig. 2). The loaded strips are folded and stored for subsequent use. The necessity for threading needles in the course of the operation is thus obviated in great measure. Occasionally more than one hundred of these needles are employed at one operation, since our ligations, for the most part, are made by transfixion of the tissues about the vessel or by piercing the vessel itself when it is large or sufficiently important, or by a combination (Fig. 5) of these methods. Figure 3 illustrates the usual method of controlling hemorrhage from the larger vessels which have been isolated. For the control of bleeding points when the vessels have not been isolated, the needle is passed first under or between the vessel or vessels to be ligated, and then a second transfixion is made, more superficially, close to the point of the clamp and in front of it; the clamp is now tilted in the opposite direction while the operator ties the knot behind it (Fig. 4). Piercing the tissues a second time in this manner eliminates the trouble of seeing to it that the ligature, in the act of tying, is carried over the tip of the artery clamp. This method enables one also to use to the best advantage the clamps with fine points which in my opinion have much to recommend them and which in our clinic are employed almost exclusively.

6. Johns Hopkins Hospital Reports, 1891, ii, No. 5.

7. The reader is referred to the admirable work and unusually convincing articles of Dr. Y. Noguchi, Arch. f. klin. Chir., xcvi, 394, and xcix, 948.

With the finest silk and needles one can perform feats in hemostasis which would be very difficult or impossible with catgut; for example, the control of small bleeding points over the trachea, of the pia mater, of the periosteum, and the suture of wounds of vessels.

In general terms ligatures taken in this way are drawn only with firmness sufficient to control completely the bleeding, and not so tight as to crush the tissues or interfere unnecessarily with their nutrition. The same tissues tied without transfixion would have to be crushed or strangulated by the ligature and thus, at best, be reduced to the condition of a graft with diminished chances of restitution and with increased danger of wound infection. Furthermore, ligation without transfixion necessitates the use of stronger silk for the reason that a transfixing ligature cannot slip.

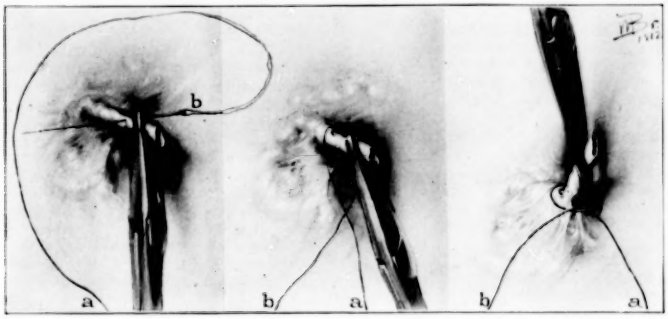


Fig. 3.—The ligation of an isolated vein or artery by transfixion. The vessel has been twisted to prevent bleeding from the needle-prick.

The surgeon who has not tested the method will be surprised to find how large a vessel may be safely entrusted to a transfixion-ligature of the very finest silk. I have seen a ligature of coarse silk, tied with crushing force, blown off, as it were, from the aorta of a dog—a ligature which had been applied 12 mm. from the proximal end of the divided vessel. This same artery was then safely obturated by a ligature of silk, No. A, which pierced it.

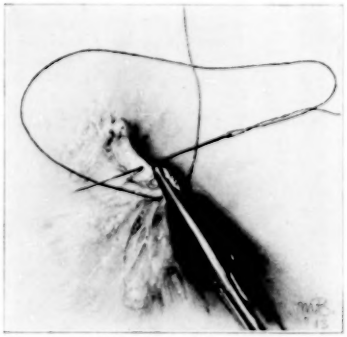

Fig. 4.—The usual method of controlling hemorrhage from one or more vessels by transfixion.

Repeatedly, he who uses catgut finds himself tying with a strand which is coarser than the vessel to be ligated.

Even for long abdominal wounds we rarely use a coarser silk than No. C (Fig. 2). Occasionally we reinforce with one or two sutures of silver wire which include skin and the anterior and posterior layers of the sheath of the rectus; otherwise fine silk (Nos. AA, A and C), is used throughout for sutures as well as ligatures. We seldom tie *en masse* in the ordinary sense of this term, and in clean wounds, I may say, never.

In the control of hemorrhage, parenchymatous or otherwise, we see to it that the thread is always well buried in the living tissue. It should not bridge over a dead space as a chord subtends an arc. In ligating the vessels of the superior pole of a thyroid lobe in the course of a lobectomy a fine, short, curved or straight needle, carrying one strand of fine silk is passed behind or between the vessels, and then through the twisted artery or vein, or both, and the thread is tied on both sides of the clamp. The ligation of the superior thyroid vessels is usually deferred until the end of the operation, these vessels being divided and entrusted to a reliable, fine-pointed clamp in the early stage of the operation.

The difficulty, the cost and the infeasibility of keeping on hand a large supply of needles threaded with catgut, as well as the size of the gut, almost preclude the extensive use of this material for the control of hemorrhage by transfixion.

Fig. 5.—Ligation by transfixion of non-isolated vein, to be divided at X. The clamp is on the tumor-side of the vessel.

That surgeons obtained excellent results with silk even when gloves were not worn one may convince himself by the papers of Kocher,[1] Heidenhain[8] and Hägler.[9] Now that rubber gloves are invariably worn, the results with silk, properly employed, are so perfect that I believe its adoption will ultimately become general.

8. Heidenhain: Centralbl. f. Chir., 1899, No. 26, p. 225.
9. Hägler: Ibid., 1899, No. 5, p. 132.

A few days ago, seeing a surgeon of great eminence and unusual fairness of mind burying sutures of catgut I inquired, "Why do you still employ catgut?"

"Because I cannot free myself of the prejudice against a non-absorbable suture. I believe," said he, "that it is foolish to use catgut; and every now and then when my wounds break down too frequently I discard it."

The catgut with which he was sewing was No. 2 chromicized; it was guaranteed by America's most reliable firm "not to absorb" for twenty-six days, but not guaranteed "to absorb" within as many weeks.

It should be borne in mind that during the greater part of the period of its disintegration the catgut suture is not only not serving its purpose but is playing the rôle of necrotic tissue, of a culture medium. I trust that I shall not be considered flippant in suggesting that the ideal absorbable suture-material might be a thread which would serve its purpose for, say, ten days and be absorbed in three.

Conceded that infection is less likely to occur with silk than with catgut, it would still be objected, and quite pertinently, that, in case it should occur, the buried silk might give endless trouble and have to be removed.

It is well within reason to expect that the technic may be at least so perfect when silk is employed that the wound will become infected not once in a hundred cases. If fine silk were used and the infection slight, probably none of the buried threads would be extruded, nor would healing be delayed demonstrably on account of their presence. When heavy silk has been used for any of the sutures and the suppuration is considerable, one or more or, perhaps, all of the threads would have to be removed. Even in such a case it is very unlikely that the ligatures and fine sutures would give trouble.

### THE CLAMP TWIST IN THE CONTROL OF THE HEMORRHAGE

A vessel or bleeding point inaccurately caught by the artery clamps and requiring immediate ligation for any reasons may, as is undoubtedly well known, often be controlled by a half-twist or slight rotation of the clamp. The precise situation of the vessel may then be determined by cautiously untwisting the instrument to the degree necessary to permit the escape of a fraction of a drop of blood and then retwisting. Now, instead of removing the clamp and trying again to catch the vessel in a field which, in such case, might be more or less obscured by hemorrhage, one transfixes once or twice in a dry field at the proper place and ties on one or both sides of the forceps; or if there is indication and room for two clamps, a second may be applied when the exact situation of the bleeding point has been revealed by the untwisting of the first.

The surgeon can transfix accurately with one hand while he holds the clamp in the other, and, by pulling on the twice transfixing thread, check the hemorrhage before tying. The bleeding being arrested, both hands are freed for making the knot.

### THE INTERRUPTED STITCH

We find ourselves using the interrupted variety of suture even more frequently than formerly. It is more accurate, reliable and convenient than the running stitch, and, with the long straight needles armed and conveniently arranged as I have described, can be taken about as quickly as the latter. The head nurse of the operating-room hands the threaded needles to the surgeon, presenting them to him pointward. The operator can take a stitch in the time required by the nurse to withdraw the next needle and thread from the cloth in which they have been basted. The knots are tied after all the stitches have been taken. With the aid of a good assistant very little time is consumed in the tying. A granny knot is adequate when fine silk is used. In some instances the granny is better than the reef knot, for in the tying of the former in the presence of tension the traction on the first turn of the knot can easily be maintained, and should the first turn loosen, in the taking of the second the slack can usually be taken up in the drawing home of the latter.

### UNDRAINED WOUNDS

Fine silk frequently enables one to close a wound which would have to be drained if catgut were employed. Bleeding points so fine as to be awkwardly or not at all ligable with catgut may be readily and quickly controlled by a transfixing suture of the finest silk tied sometimes with merely a half knot. When the ends of such a knot are cut very short the silk is barely visible.

I am taking for granted it will be conceded that unless the hemostasis is quite perfect and the likelihood of bleeding after closure of the wound negligible, drainage should usually be resorted to. Unfortunately catgut as material for ligature does not afford the security from hemorrhage that silk does, partly because its knots are not so dependable and partly because, as I have said, the former cannot so conveniently or so universally be resorted to for transfixion as the latter.

### FAULTY TECHNIC

The surgeon who desires to use silk and who, after giving it a fair trial, finds that his results are not so good as with catgut may, I think, quite surely attribute his failure to himself—to faulty technic. By faulty technic I do not mean merely breaks in asepsis.

One should not of course use silk for ligating or suturing in the presence of infection. Nor should one bring parts together under such degree of tension as to cause necrosis or interfere greatly with the blood-supply, for nothing is gained by so doing and decided harm may result. Healing is menaced when the circulation of the tissues to be united is impaired.[10]

In operations made through healing tissues catgut may occasionally be used in preference to silk.

The silk employed should never be coarser than necessary and it is useless to employ a thread for suture which is stronger than the tissue itself. A greater number of fine stitches is better, as a rule, than a few coarse ones.

*Avoid, if possible, the combined use of silk and catgut in a wound.*

For sewing up an abdominal wound, when it is necessary here and there to take heavy deep stitches perforating skin and muscles, silver wire serves admirably. When the skin can be approximated without tension we usually employ interrupted perforating stitches of very fine silk. If the skin-edges have to be brought together under considerable tension we recommend a subcuticular stitch of silver wire taken with the Hagedorn or Schnötter[11] needle.

10. In operations for the oblique as well as the direct form of inguinal hernia we sometimes split vertically the sheath of the rectus muscle for the relief of strain on the stitches holding together the internal oblique muscle or conjoined tendon and Poupart's ligament.

11. It is known only to a few surgeons that the late Dr. Schnötter, surgeon to the German Hospital, New York, devised and used the needle curved on the edge some years before Hagedorn described it.

I have presented this matter in such detail because so many have tried with indifferent or worse than indifferent success to substitute silk for catgut, and because I am told, as I have said, that the operators and pupils of the surgical clinic of the Johns Hopkins University are quite the only ones in this country who systematically employ the former.

I believe that the tendency will always be in the direction of exercising greater care and refinement in operating, and that the surgeon will develop increasingly a respect for tissues, a sense which recoils from inflicting unnecessary insult to structures concerned in the process of repair.

### THE EPITHELIAL STITCH

In the toilet of wounds in animals we meet conditions different in some respects from those which obtain in the human subject. The long hair, the deep follicles of the skin of dogs and the inconveniences incident to subsequent dressings make it desirable to modify the technic of closing the wounds in these animals.

Stitching of the platysma muscle does not hold together sufficiently well the edges of the skin, and the subcuticular stitch taken close to the incised border is not so safe in the dog as in the human subject because the follicles are relatively deeper and more numerous in the former. Hence, in the dog, after suturing the platysma we place a running subcuticular suture a little further than usual from the free edge of the skin. Should now the approximation of the skin not be sufficiently perfect we add the "epithelial stitch." This is made with silk about 00 fine and with a needle to correspond. Hardly more than the epithelium is pierced by the needle, and the suture when completed describes almost a straight line (Fig. 6). The epithelial stitch produces no irritation and does not require subsequent attention, for it rubs off in the ordinary process of attrition, or it may be pulled off at any time like a plaster. Inasmuch as, in dogs, stitches which pierce the skin should be removed in two or three days lest the infection which they cause give rise to suppuration, and as it is undesirable and troublesome in the case of animals to remove stitches or to expose the wound so soon after operation, stitching in some such way as above described has decided advantages.

### CELLOIDIN-BATISTE

In many of our operations, and always when it seems particularly indicated, we paste to the skin over a wide field a fine batiste (sometimes gauze, or silk) dipped in celloidin.

In amputations at or near the hip-joint, the actual field of operation may or may not be covered with the cambric. A liberal flounce-like sheet pasted along the side of the genitals from pubes to sacrum, along Poupart's ligament and from the anterior superior spine of the ilium along the outer side of the thigh to the tuberosity of the ischium, in other words a truncated hollow cone which encircles the thigh just above the line of amputation, suffices. This flounce should extend well up on to the abdomen and back and side, and down on the inside of the opposite thigh.

### GLOVES

Rubber gloves must, of course, be worn by all concerned in the operation.

In a letter of a few weeks ago the director of a famous German clinic asked me to give him references to articles that I might have written on the subject of rubber gloves. As response to his request and believing that a brief account concerning the introduction of gloves may eventually be of interest I will, in as few words as possible, relate the story.

In the winter of 1889 and 1890—I cannot recall the month—the nurse in charge of my operating-room complained that the solutions of mercuric chlorid produced a dermatitis of her arms and hands. As she was an unusually efficient woman, I gave the matter my consideration and one day in New York requested the Goodyear Rubber Company to make as an experiment two pair of thin rubber gloves with gauntlets. On trial these proved to be so satisfactory that additional gloves were ordered. In the autumn, on my return to town, the assistant who passed the instruments and threaded the needles was also provided with rubber gloves to wear at the operations. At first the operator wore them only

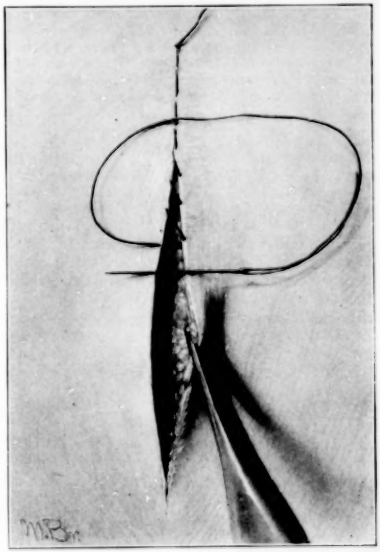

Fig. 6.—The epithelial stitch. The thread, needle and bite of skin should be much finer than the drawing indicates.

when exploratory incisions into joints were made. After a time the assistants became so accustomed to working in gloves that they also wore them as operators and would remark that they seemed to be less expert with the bare hand than with the gloved hands.

I think it was Dr. Bloodgood, my house surgeon, who first made this comment and that he was the first to wear them, invariably, when operating.

In the report[12] which I made of the first year's work at the hospital, written in November and December, 1890, and published in March, 1891, I stated that the assistant who passed the instruments wore rubber gloves. This assistant was given the gloves to protect his hands from the solution of phenol (carbolic acid) in which the instruments were submerged rather than to eliminate him as a source of infection. I do not recall having

12. Johns Hopkins Hosp. Rep., iv, No. 6, plate xii.

referred again, in my publications, to the employment of rubber gloves. Dr. Hunter Robb in 1894, in his book on aseptic technic[13] recommended that the operator wear rubber gloves. Dr. Robb was, at that time, resident gynecologist of the Johns Hopkins Hospital and had frequent opportunities to observe the technic of the surgical clinic.

This incidental reference by Robb in 1894 to the wearing of rubber gloves, and the fact that a photograph of an operation for breast cancer taken late in the year 1893 shows that gloves were not being regularly worn by us at that time, serve to establish approximately the date of their definite introduction.

Dr. Joseph C. Bloodgood, in his elaborate report[15] on Hernia makes the following statements with reference to the wearing of gloves:

> **The writer was the first as operator to wear gloves as a routine practice in practically all clean operations. He began to wear gloves invariably in December, 1896; before this date he had operated in twenty cases of hernia with four suppurations, all late infections; wounds were closed with silver wire. Since wearing gloves he has operated in 100 cases of inguinal hernia. In one case (recent) the wound suppurated.**
>
> **Rubber gloves were introduced by Professor Halsted soon after the hospital opened in 1889. They were invariably worn by the assistant who handed instruments and by the assistant at the wound, usually the nurse in charge of the operating-room. The operator himself rarely wore gloves (*at that time*)[16] except when clean joints were opened.**

Thus the operating in gloves was an evolution rather than an inspiration or happy thought, and it is remarkable that during the four or five years when as operator I wore then only occasionally, we could have been so blind as not to have perceived the necessity for wearing them invariably at the operating-table.

It is also noteworthy that none of the many surgeons, foreign and American, who visited our clinic in those years should have recognized the desirability of eliminating the hands as a source of infection, by the wearing of gloves.

We did not realize how slightly the sense of touch is obtunded by the rubber covering,[17] or how unessential it is in most operations that the greatest delicacy of finger perception be preserved. Furthermore we were delighted with the results in healing already obtainable, so vivid were the memories of infections in the recent past.

### SILVER FOIL

Since 1894[18] we have covered our fresh wounds with silver foil and are quite convinced that this dressing has appreciable chemical as well as physical values.

That various metals inhibit the growth of certain organisms has been proved by Miller,[19] Nägeli,[20] Behring,[21] Uffelman,[22] Meade Bolton[23] and others.

Bolton's work interested me particularly because very kindly, in our behalf, he tested thoroughly the effect of silver on the growth of the common pyogenic microorganisms. For his experiments he used silver in various forms but particularly the silver foil with which we were at the time covering our wounds.

I had previously employed foils of copper, brass, gold and aluminum and had found that copper and brass irritated the skin. The silver foil had given, clinically, the most satisfactory results and I was pleased to find that its use had the support of Bolton's carefully conducted experiments. The admirable behavior of wire in wounds which has been commented on for centuries may, therefore, be attributed to its antiseptic properties.

Under the foil the stitches which perforate the skin may, it seems to me, be left undisturbed for a greater number of days than under the ordinary dressings. Thiersch grafts implanted on clean fresh surfaces and covered with silver foil need not be investigated for ten days or more. The foil, while it seals the dry wound hermetically, readily permits the escape of fluids.

We may, possibly, overestimate the value of silver foil as a dressing, but we are wedded to its use, and I know of nothing which could quite take its place, nor have I known any one to abandon it who had thoroughly familiarized himself with the technic of its employment. Moistening the skin and the applied foil with alcohol facilitates its application, but alcohol should not be employed in the laying on of the foil over skin-grafts.

Three or four layers of foil are usually placed on the closed incision, and over these is laid the thin paper between the leaves of which the foil is packed. We have occasionally covered the foil with strips of very thin, bibulous, Japanese paper. Foil without paper and covered with crêpe lisse and celloidin makes a particularly neat dressing for wounds of the face and scalp.

### GUTTA-PERCHA TISSUE

Dr. Jacob Frank,[24] in an interesting account of the discovery of gutta-percha and the uses of gutta-percha tissue in surgery stated that perhaps the first mention of this tissue is to be found appended to a report on gutta-percha submitted to the Académie de médecine, July 30, 1850, by a commission composed of Messrs. Chevalier, Poiseuille and Robert. It was called *tissu électro-magnétique*, approved by the National Academy of Medicine, tested in the various hospitals in Paris, and recommended as a sovereign remedy for gout, rheumatism, sciatica, migraines, neuralgias and gastralgias, for the resolution of varices, for the dressing of wounds, burns, etc.; also for pneumonia in its early stages. The tissue was relatively thick; it could be washed and used indefinitely, and was represented as being greatly superior to the medicated oiled papers which were not only inert but soiled the body and the linen and were altogether disagreeable in use. "To convince oneself of its magnetic properties, one had merely to rub it lightly on a piece of cloth and hold it above sawdust. Instantly particles of the sawdust would spring up and attach themselves to the tissue."

In the light of our experience with the gutta-percha tissue of the present day we can well believe that the *tissu électro-magnétique* was really serviceable at times in the treatment of the affections enumerated. Its disuse may have been due in part to its pseudonym.

13. Robb, Hunter: Aseptic Surgical Technic.
15. Johns Hopkins Hosp. Rep., 1899, vii. Operations on 459 cases of hernia in the Johns Hopkins Hospital from June, 1889, to January, 1899.
16. Italicized words mine.
17. For example, in the early days of rubber gloves I removed the glove from one hand, not infrequently, to palpate the common bile-duct in search for stone.
18. Halsted: Am. Jour. Med. Sc., July, 1895.
19. Miller: Demonstration einer Methode zur Bestimmung der antiseptischen Eigenschaften von Zahnfüllungsmitteln, Verhandl. d. deutsch. odont. Gesellsch., 1889, i, 34.
20. Nägeli, C. von: Ueber oligodynamische Erscheinungen in lebenden Zellen. Denkschr. d. schweiz. naturforsch. Gesellsch., 1893, xxxiii, 1. See also review in Bot. Centralbl., lv, 93.
21. Behring: Ztschr. f. Hyg., 1890, ix, 482.
22. Uffelman: Beiträge zur Biologie des Cholerabacillus, Berl. klin. Wchnschr., 1892, No. 48, p. 1212.
23. Tr. Assn. Am. Phys., 1894, p. 174.
24. Frank, Jacob: Gutta-Percha Tissue in Surgery, THE JOURNAL A. M. A., March 19, 1910, p. 942.

Dr. Manoury,[25] six years later, recommended medicated plaques[26] of gutta-percha.

To apply a plaque one dips it in warm water, 40 degrees, in order that it may conform by its flexibility to the protuberances and anfractuosities of the ulcer; when it has been applied one covers it with a cloth wet with cold water, with view to preventing the adhesions of this cloth to the external surface of the plaque.

A. Cousin[27] in 1872 wrote as follows:

Gutta-percha, on account of its numerous and valuable properties, has for a long time attracted the attention of practitioners of medicine and surgery, and on consulting the instructive collection of the *Bulletin de thérapeutique* one finds not less than twenty-three papers devoted to the consideration of the diverse uses of this substance.

It has been employed, in the solid state, in the fabrication of apparatus for fractures, of caustic pastes, of sounds and bougies, of prothesis, of various utensils; dissolved in chloroform it was at one time much vaunted in the topical treatment of certain skin affections as substitute for collodion.

Every one knows to-day the excellent results obtained by the occlusive method in the treatment of a great number of medical and surgical affections (occlusive dressings, compressing or contracting, of collodion, swathing in impermeable cloths, pneumatic occlusion, wadded splints, etc.). It would take too long to study, comparatively, the indications for the various dressings or the advantages and defects that they present; I wish simply to make known to the readers of the *Bulletin* a method which I believe to be new and which is assuredly as simple and easy one for making occlusion.

I employ for this purpose leaves of gutta-percha reduced by rolling to the thinness of waxed taffeta, and I take advantage of its extreme solubility in chloroform to give to this material adhesive qualities of considerable degree.

I proceed in the following manner: Given a surface of skin to be covered, I cut a piece of flattened gutta-percha to dimensions two or three times as large as this area; I trace along the border of this variety of plaster, for an extent of 1 or 2 cm., a brush dipped in chloroform and apply it immediately to the skin; adhesion takes place with great energy at all the points touched by the chloroform, and so perfectly that the slightest irregularities of the skin are reproduced with remarkable fidelity in the impermeable material.

I have quoted at such length from the article of Dr. Cousin in order to make clear what were the uses which had been made of gutta-percha tissue to the year 1872, and because it may be interesting to others to read the original description of a clever and useful procedure—the pasting of the edges of a leaf of gutta-percha to the skin by means of chloroform.

Occasionally we paste with chloroform in this way a small scrap of gutta-percha tissue to a piece of old linen when the skin surrounding the granulating surface which is to be covered with gutta-percha tissue is likely to become irritated by the discharges from the ulcer. In such case the protective is cut to the precise size of sore, the skin about which being covered with an ointment of zinc oxid; the discharges are promptly absorbed by the linen and overlaid dressings. It is well, under these conditions, to cut a tiny hole through both protective and linen to permit the prompt escape of the secretions of the wound into the dressing.

Dr. Frank gave two references[25, 27] to the early employment by physicians of plaques or "sheets" of gutta-percha, but was unable to make any statement relative to its introduction in its present form and for its present purposes, and leaves unfilled a gap of perhaps a quarter of a century.

As I know of no one except myself who can tell the story I may be pardoned for a moment's indulgence in reminiscence.

As intern of Bellevue Hospital, New York, from 1876 to 1878 I had frequent opportunities to observe the pain and bleeding incident to the tearing out of gauze from large involucral cavities after sequestrotomy—gauze which had been stuffed into these cavities to arrest bleeding and into which the granulations had grown, often for a considerable distance. Wounds of the soft parts would also be packed with gauze, which from its adhesion to the skin would cause pain, sometimes very distressing, and the first removal of the gauze was an event anticipated with apprehension by the patients, who were quite sure to be advised by their ward-neighbors of its terrors.

During the two years of my study abroad the desirability of obviating this rather barbarous practice was repeatedly enforced on me by what I saw in the foreign clinics, and on my return to America in 1880 I promptly cast about for some sort of protective, non-adhering dressing. Oiled silk and the green protective of Lister were not sufficiently pliable. Finally a salesman in one of the surgical supply stores showed me a bed-sheet of gutta-percha as heavy as blotting-paper, remarking that it could be rolled out to any degree of thinness. I requested him to procure the thinnest tissue possible, and in the course of a few weeks he provided me with samples, none of which was sufficiently thin. After a month or two tissue of the desired thinness was obtained and from that day until the present, a period of nearly thirty-three years, gutta-percha tissue, usually referred to as rubber tissue or protective, has been one of the most prized and indispensable articles of my surgical armamentarium.[29]

Accounts of the first employment of gutta-percha tissue to protect granulations from insult and to prevent them from growing into or adhering to drains, gauze packs and dressings and to promote healing under a moist scab can probably be found in the records of the Roosevelt Hospital Dispensary, New York, from 1881 to 1886, the term of my incumbency as director of this dispensary; and some of my assistants and students of those years will doubtless recall having employed it there as a dressing for wounds.

I have not searched for references to the use of gutta-percha tissue in its present form and for its present purposes subsequent to the time of its introduction in 1881, but I am quite sure that no mention of it will be found prior to 1884 or 1885, and that should there be any such it will have been made by surgeons of New York who might have learned of it from my students or seen it employed at one of the various hospitals with which, as attending surgeon, I was connected.

Its employment as drainage material for the abdominal cavity came about as follows:

At first we tucked it about the gauze drains at the surface only, in order to prevent adhesions to the skin. Then the protective was carried deeper and deeper into the wounds until finally the entire gauze drain or gauze pack, except at the very bottom, was enveloped in the gutta-percha tissue.

The experiments of Dr. Yates of my staff, made to determine the amount of time required for the formation about the protective of intestinal adhesions, were

25. Manoury, A.: Des plaques de gutta-percha médicamenteuses et leur applications, Bull. gén. de therap. méd. et chir., 1856, vol. l.

26. *a*. Plaques de gutta-percha et de limaille de fer porphyrisé. *b*. Plaques vésicantes composés de gutta-percha et de cantharides. *c*. Caustique fluidifiant (gutta-percha and potassium). *d*. Caustique coagulant (gutta-percha and chlorid of zinc).

27. Cousin, A.: Sur l'emploi de la gutta-percha laminée comme agent d'occlusion, Bull. gén. de therap. méd. et chir., 1872, lxxxii.

29. Brief reference to the use of gutta-percha tissue is made in Johns Hopkins Hosp. Rep., ii, No. 5, p. 306.

especially important and had their influence in emboldening the surgeon at times to dispense altogether with the gauze, placing his reliance on the gutta-percha.

Not very often do we venture to drain an abdominal wound with nothing but protective. Usually the cigarette form of drain is employed—gauze enveloped in protective—when we wish to know that a drain is precisely and promptly fixed in the desired position, as it is by the little tuft of gauze at the bottom of the cigarette.

For certain cases in which it seems desirable that adhesions should form more rapidly and firmly about the abdominal drain we make it as follows: Two squares, one of gauze (single sheet) and one of protective, are rolled together, the gauze outside, until a drain of the desired thickness is obtained. Granulations cannot pierce this drain deeper than the single layer of gauze, because they at once encounter the underlying protective. Such a drain is removed quite as easily as the cigarette drain and offers a little more security than the latter.

A moist scab, so-called, is better than a dry one. The surgeon has many opportunities to convince himself of this. When he has occasion to extract a toe-nail let him cover one-third of the raw surface with protective and allow the remainder to heal under the dry scab. The patient may have pain in the digit soon after the dry scab is well formed, and the surgeon will perhaps observe that the soft parts about the nail-bed on the side of the dry scab are inflamed. On covering the entire surface of the granulating wound with gutta-percha tissue the pain will promptly be relieved and the inflammation subside.

The dry scab imprisons secretion which in turn gives rise to tension, and the tension impairs the vitality of the tissues under and at the border of the dry scab to an extent sufficient to place them at a disadvantage in their combat with the microorganisms, and to compel absorption of the toxins.

Even pimples and trivial wounds of, for example, the fingers behave best under the moist scab. For the healing of wounds under the moist blood-clot, particularly when the skin cannot be made to cover the cavity to be filled with blood, gutta-percha tissue is invaluable. It would be found useful in every household and should be included in the supplies provided for first aid to the injured. The value of the moist scab should be common knowledge for the layman, and gutta-percha tissue should replace for him the sticking-plaster as a covering for wounds.

A few months ago in reading one of Lister's[30] first papers on the use of phenol in wounds I noted that he mentions having covered a wound with a tissue of gutta-percha. This interested me so much that I wrote at once to Sir William Watson Cheyne, being confident that no one could give me the desired information so well as he. From his kind reply I quote as follows:

> So far as I understand the matter, Lister tried various materials to cover the wound after an operation, so as to prevent the phenol in the dressing from penetrating in any quantity to the wound. Among other things he tried gutta-percha tissue, but he abandoned that because the phenol easily passed through it so that it did not protect the wound from the irritation of the antiseptic, and the material he ultimately hit on was oiled silk, covered with a layer of dextrin, so as to allow it to be wet. The oiled silk itself did not prevent the phenol vapor from passing through it, but the combination of oiled silk and shellac, according to Lister's experiments, did. As regards any question of priority in using it, so far as any claim can be advanced on Lister's behalf, it would not hold, because he tried it and abandoned it as being unsuitable for his particular purpose.

From 1879 to 1889 I made frequent visits to England and the continent and was in close touch with the work of the surgical clinics of England, France and Germany, and not once in that period did I see gutta-percha tissue employed in Europe.

It is gratifying to me to observe the place in surgery which gutta-percha tissue has gradually won for itself. For the American surgeon it has become an indispensable appurtenance of his equipment.

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30. Lancet, London, March 16, 1867, p. 328.

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## THE CONSERVATIVE TREATMENT OF DIABETIC GANGRENE OF THE LOWER EXTREMITY

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When I began my practical surgical work some eleven years ago, I was appalled by the tremendously high mortality following operative interference in cases of diabetic gangrene. The usual treatment at that time was early amputation in the thigh under chloroform or ether anesthesia. The death-rate must have reached nearly 100 per cent., for I distinctly recall my agreeable surprise and astonishment when I witnessed the first recovery after seeing patient after patient, inside of a period of about two years, die in coma within from a few days to a couple of weeks after high amputation. It has always been my conviction that there was something radically wrong with our therapy, and that, if we adopted more rational methods, our results would be improved. By a gradual evolution we have finally developed a system of therapeutics that holds out some hope for these cases, which at one time gave such an utterly hopeless prognosis. It has been my good fortune to test this system in a series of cases which have come under my observation in the past two and a half years, and though the series is small, the difference in the

Foot of Patient 4. Note the division of the nail into two segments. The formation of the healthy, new segment began with the hyperemic treatment.

results has been so striking that I feel that a publication of my experiences is warranted at present.

In dealing with diabetic gangrene we must first appreciate the essential factors in the pathology of the condition. The primary feature of this type of gangrene is identical with that of every other form of necrosis, namely defective nutrition. In diabetic gangrene, this is invariably due to an obliterating endarteritis of the main arterial vessels of the limb. Added to this, however, we have a greatly increased susceptibility to local death, owing to the generally diminished resistance of the body from the exhausting effects of the perverted metabolism of the disease on the one hand, and to the extreme predisposition of the parts to bacterial invasion on account of the excellence of the cultural properties of the glucose-soaked blood and tissues on the other. Further, we must always bear in mind that systemic complications of the disease must be reckoned with. Of course, of these the all-important one is the so-called acidosis, resulting frequently in the almost invariably fatal diabetic coma of Kussmaul. The tendency to pneumonia, sepsis and decubitus is also not to be ignored.

The most obvious result of the former method of treatment by early high amputation was the more or less rapid development of diabetic coma following operation. This was apparently due to the shock of the operative interference *per se*, or to the effects of the ether or chloroform anesthesia. When nitrous oxid anesthesia was substituted and the operation more expeditiously performed, the results were somewhat improved. Usually, however, the stump became gangrenous from the actual trauma to the poorly nourished and susceptible tissues at the site of operation. Gangrene of the flaps, sloughing of the deeper structures, retention, necrosis of the bone, often necessitated reamputation and if the patient escaped a coma after the first operation, the shock of repeated major operations and anesthesias was usually sufficient to cause the development of coma after the second or third operative attempt. Simplification of the technical details of the operation, the avoidance of osteoplastic methods, the use of circular flaps and the leaving of the flaps wide open without any sutures whatever, still further improved the results and diminished the frequency of the necessity for reamputation, if the patient survived the first operation.

Still the results were anything but brilliant and it became apparent that these radical measures were not correct. Three questions naturally presented themselves: First, why was a radical amputation advisable at all in the vast majority of cases? Second, what was the urgency for radical measures? Third, if amputation was necessary, was high amputation always indicated? A careful consideration of these three questions in conjunction with our clinical observations convinced me that in answer to the first proposition we could definitely state that in most of the cases a radical amputation was not advisable. In answer to the second question, we could say that although amputation might become necessary owing to the extension of the gangrene or phlegmon, it was almost never imperative at the inception of the gangrene. In answer to the third question, we could say that if amputation became necessary, high amputation was by no means always indicated, the choice of the site of amputation depending on various factors.

From these premises a method of conservative therapy has been gradually evolved based on the following three cardinal principles:

1. Systemic treatment of the diabetes and prophylaxis against the development of dangerous complications, especially coma.

2. An attempt to improve the circulation in the extremity.

3. The treatment of the local infection on rational general surgical and aseptic principles.

Inasmuch as individualism is the watchword in the application of these three principles, I shall first present the clinical data of the series of cases which in the past two and a half years I have had the opportunity of treating according to this plan.

### CASE REPORTS

**CASE 1.**—June 21, 1910: A. B., woman, aged 51. Diabetes, eleven years; local trouble, four weeks. Examination: Phlegmon of the dorsum of the left foot, with a necrosis of the extensor tendon of the second toe and beginning gangrene of the surrounding tissues. Phlegmon extended up the leg. General condition fair. Temperature 100.6 F.

Sugar, 1.5 to 5 per cent. Acetone +. Diacetic acid +. Radials soft. Popliteal pulse felt. No posterior tibial nor dorsalis pedis pulse felt.

Routine conservative treatment. Operative procedures: Phlegmon incised four times, June 21 and 27, July 18 and Aug. 13, 1910. Final incision extended up leg, nearly to tibial tubercle and gangrenous tendon of tibialis anticus was removed at the time. Duration of treatment, three months. Result, cured.

Patient was last seen Feb. 21, 1912. She had gained twenty-one pounds. She has had a small ulcer in the scar for a few days. Otherwise, she is very well.

**CASE 2.**—Oct. 14, 1910: J. K., man, aged 57. Diabetes, three and a half years; local trouble, three weeks. Examination: Beginning gangrene of the second toe, left foot, with necrosis of the proximal phalangeal joint. General condition good.

Sugar, 3.5 per cent. Acetone +. No diacetic acid. Radials thickened. Dorsalis pedis pulse felt.

Routine conservative treatment. Operative procedures: Curettage of sinus, Nov. 6, 1910. Marked local reaction after curettage rapidly relieved by baking. Duration of treatment, two months. Result, cured.

Patient was last seen Jan. 25, 1913. For about a year and a half he has had plantar ulcers on both feet. Third toe, left foot removed July 31, 1911. See Case 13.

**CASE 3.**—Oct. 14, 1910: C. T., man, aged 56, patient of Dr. F. Kammerer. Duration of diabetes unknown. Local trouble two weeks. Examination: Dry gangrene of the fifth toe, left foot. General condition good.

Sugar, 1.8 per cent. Acetone, trace. No diacetic acid. Radials thickened. No popliteal, posterior tibial, or dorsalis pedis pulse felt.

Routine conservative treatment, except baking. Operative procedures: Gangrenous toe removed at phalangeal metatarsal joint after demarcation, Nov. 8, 1910. Duration of treatment, three months. Result, cured.

Patient last seen, Dec. 19, 1912. He has had no further trouble with his left foot. See Case 17.

**CASE 4.**—Nov. 28, 1910: D. S., man, aged 58. Duration of diabetes unknown: local trouble, six months. Examination: Moist gangrenous area at the phalangeal joint of the great toe, left foot, and necrosis of the joint. Amputation of the leg had been advised by a very competent surgeon. General condition good. Excruciating pains present in the leg.

Sugar, 1.2 per cent. No acetone or diacetic acid. Radials thickened. No popliteal pulse felt.

Routine conservative treatment. Operative procedures: Disarticulation of great toe at phalangeal metatarsal joint, Nov. 29, 1910. Curettage of sinus and resection of head of metatarsal with removal of sesamoid bone in flexor tendon, Feb. 15, 1911. Counter-incision on plantar surface over distal extremity of metatarsal, March 10, 1911. Most decided effect from the

baking and bathing. Pains were relieved; vascularity of the parts definitely increased as was noted at the second operation and the toe-nails changed in character (See Illustration). Duration of treatment, six months. Result, cure.

Patient last seen, Jan. 28, 1912. No further trouble with left foot. See Case 9.

CASE 5.—Dec. 19, 1910: P. G., male, aged 64. Diabetes, two years; local trouble, two weeks. Examination: Dry gangrene of the second toe, left foot, encroaching on the great and third toes and without definite line of demarcation. Marked redness and swelling of the dorsum of the foot. Gangrene continued to extend to the great toe and upward on the plantar and dorsal surfaces of the foot. General condition good. With the extension of the gangrene, septic rises of temperature to 102.5 F. Plantar ulcer on the right foot.

Sugar, 1.8 per cent. No acetone or diacetic acid. Radials slightly thickened. No popliteal, posterior tibial, or dorsalis pedis pulse felt.

Routine conservative treatment. Operative procedures: Disarticulation of second toe at phalangeal metatarsal joint after demarcation with plantar counter-incision, Dec. 30, 1910. Extension of counter-incision, Jan. 10 and Jan. 13, 1911. Circular amputation of leg at junction of upper and middle thirds, Jan. 17, 1911. Some sloughing of the skin and fascia, in spite of the fact that the flaps bled freely. Slight transient delirium and acetonuria after amputation. Duration of treatment, four months. Result, cured.

The plantar ulcer on the right foot healed under the routine conservative treatment. It has reopened occasionally since, but always heals with rest, baking and bathing. Patient has an artificial limb, walks well and attends to business. He has had no further trouble with left leg.

Patient was last seen Jan. 19, 1913. The stump was in excellent condition. The plantar ulcer on the right foot was healed. For two weeks he has had a small ulcer over the distal phalangeal joint, second toe, right foot. This was evidently caused by pressure from an ill-fitting shoe and has been steadily improving under rest, baking and bathing.

CASE 6.—April 5, 1911: A. R., woman, aged 53. Duration of diabetes unknown; local trouble, six weeks. Examination: Moist gangrene of the third, fourth and fifth toes and dorsum of the right foot as far as the ankle. Marked redness and swelling beyond the gangrenous area. Gangrene continued to extend without tendency to demarcation. General condition very poor. Temperature 102 F. Pulse from 102 to 120 per minute.

Sugar, 2.5 to 5.5 per cent. Acetone ++. Diacetic acid ++. Radials were thickened. No popliteal pulse felt. Blood-pressure 160 mm. Hg.

Routine conservative treatment. Operative procedures: Amputation in thigh at junction of middle and lower thirds, April 12, 1911. There was marked atheroma of the femoral artery and extensive sloughing of the flaps followed amputation. Subcutaneous abscesses developed after a hypodermoclysis of 5 per cent. sodium bicarbonate solution. An intravenous infusion of 2.5 per cent. sodium bicarbonate solution was followed by an alarming, but temporary collapse. The patient suffered from extreme polyuria, excreting as much as 7,000 c.c. daily. She finally developed an extensive decubitus and her mind became clouded.

Duration of treatment, two and a quarter months. Result death, June 14, 1911. Direct causes of death right lobar pneumonia, diabetic coma.

CASE 7.—June 22, 1911: J. W., patient of Dr. J. F. Erdmann, woman, aged 64. Diabetes fourteen years; local trouble, six months. Examination: Large moist gangrenous area on the inner surface of the left foot starting from the heel and involving the flexor tendon of the great toe and plantar region. Numerous discharging sinuses on the plantar surface of the metatarsal region of the great toe. Gangrene extended upward along the tibialis posticus tendon. General condition very poor. High temperatures with the extension of the phlegmon upward.

Sugar, 3 to 5 per cent. Acetone ++. Diacetic acid +. Radials slightly thickened. No popliteal pulse felt.

Routine conservative treatment. Operative procedures: Repeated incisions in plantar region and along tibialis posticus tendon.

At first there seemed to be some improvement in the local condition. The sloughs separated and the granulations assumed a healthy appearance. Baking was discontinued because it was too exhausting. The general condition was too bad to warrant amputation.

Duration of treatment, one month. Result death, July 23, 1911. Direct cause of death, diabetic coma.

CASE 8.—July 31, 1911: E. G., patient of Dr. F. Kammerer. Diabetes ten years; local trouble, two weeks. Examination: Extensive moist gangrene of the fifth toe with a phlegmon of the plantar and dorsal surfaces of right foot. General condition very poor. Temperature 103 F. Pulse 96 per minute. Occasional delirium.

Sugar, 3 per cent. Acetone ++. Diacetic acid ++. Radials thickened. No popliteal pulse felt.

Routine conservative treatment. Operative procedures: Extensive incisions of dorsal and plantar phlegmons, July 31, 1911. Removal of gangrenous toe after demarcation, Aug. 22, 1911. New counter-incision in plantar region connected with dorsal incision, Aug. 30, 1911.

Baking was discontinued because it was too exhausting.

At first there seemed little prospect of saving the leg or even the life of the patient, but there was a prompt and remarkable result from the conservative therapy.

Duration of treatment two and a half months. Result, cure.

Patient was last seen Aug. 29, 1912. She has been quite well, except for a small pressure ulcer on the fourth toe, right foot, which she has had for a few days. A written communication dated Jan. 14, 1913, states that she is very well.

CASE 9.—Nov. 30, 1911: D. S. (same patient as Patient 4), man, aged 59. Diabetes, at least one year; local trouble, one day. Examination: Moist gangrenous ulcer at second phalangeal joint, fifth toe, right foot. Necrosis of the joint and no well-defined demarcation. Gangrene threatened to extend. General condition good.

Sugar, 1 per cent. No acetone or diacetic acid. Radials thickened. No popliteal pulse felt.

Routine conservative treatment. Operative procedures: Amputation of toe at phalangeal metatarsal joint with resection of head of metatarsal, Jan. 24, 1912.

There was a sudden rise of temperature to 104.5 F. with a pulse of 120 per minute twenty-four hours after operation. The flaps became gangrenous and there was a lymphangitis running up the leg. The patient became comatose and higher amputation was out of the question on account of the general condition.

Duration of treatment, two months. Result death, Jan. 28, 1912. Direct cause of death sepsis.

CASE 10.—March 25, 1912: A. P., woman, aged 64. Diabetes eight years; local trouble five weeks. Examination: Moist gangrenous area, 1.5 cm. in diameter, on the outer side of the fifth toe, left foot, at the phalangeal metatarsal joint. General condition good. Severe pains in the leg.

Sugar, 0.7 to 1.5 per cent. No acetone or diacetic acid. Radials slightly thickened. Dorsalis pedis pulse felt.

Routine conservative treatment. Duration of treatment, two months. Result, cure.

Patient was last seen April 5, 1912. She has a small, clean granulating wound, which is rapidly healing, and her pains are relieved.

CASE 11.—April 10, 1912: M. D., woman, aged 54. Duration of diabetes unknown; local trouble, four weeks. Examination: Moist gangrene of the distal phalanx of the great toe, right foot. Extensive phlegmon of the dorsum of the foot along the extensor tendon of the great toe. No well-defined demarcation. General condition poor. Temperature 100.8 F. Pulse 120 per minute.

Sugar, 2.2 to 3.8 per cent. Acetone ++. Diacetic acid +. Radials soft. Popliteal pulse felt. No posterior tibial or dorsalis pedis pulse felt. Blood-pressure, 133 mm. Hg.

Routine conservative treatment. Operative procedures: Demarcated sloughs with distal phalanx and extensor tendon

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removed. Removal of end of proximal phalanx to permit skin flaps to cover toe, June 15, 1912.

There was a most remarkable result from the conservative treatment. Though the loss of the limb was threatened, the gangrenous tissue quickly separated and the wound cleaned up promptly.

Duration of treatment three and a half months. Result, cure.

Patient was last seen, July 29, 1912. A communication from the patient, dated Dec. 28, 1912, states that about four and a half months previously, the second toe on the right foot showed an open wound which healed in three weeks. She has been quite well since.

CASE 12.—May 25, 1912: E. A., man, aged 40. Duration of diabetes unknown; local trouble, one month. Examination: Moist gangrene of the fifth toe, right foot, with extension along the flexor tendon and sinus formation on the plantar surface of the foot. Severe phlegmon with lymphangitis of the dorsum of the foot extending half way up the leg. Inguinal glands swollen and tender. General condition very poor. Marked evidences of sepsis. Temperature 104 F. Pulse 110 per minute.

Sugar, 0.25 per cent. No acetone or diacetic acid. Radials soft. Popliteal, posterior tibial, and dorsalis pedis pulse felt. Blood-pressure, 145 mm. Hg.

Routine conservative treatment. Operative procedures: Removal of gangrenous distal phalanx of fifth toe after demarcation, June 29, 1912. Sinus openings on plantar surfaces connected and tendon slough were removed, July 2, 1912.

There was a most remarkable result of conservative therapy. At first there seemed little prospect of saving the patient's life with anything less than a thigh amputation. After a few days of baking and bathing, the phlegmon, lymphangitis, and adenitis subsided, the temperature dropped to normal and remained so, and there was a rapid demarcation of the gangrene.

Duration of treatment, two months. Result, cure. Patient last seen, July 31, 1912. Wound entirely healed.

CASE 13.—June 8, 1912: J. K. (same patient at Patient 2), man, aged 59. Diabetes five years; local trouble, one day. Examination: Beginning gangrene of the fifth toe, right foot, with cellulitis of the dorsum of the foot and necrosis of the proximal phalangeal joint. General condition fair.

Sugar, 3 per cent. Acetone +. No diacetic acid. Radials rigid. Dorsalis pedis pulse felt. Blood-pressure, 210 mm. Hg.

Routine conservative treatment, except baking. Operative procedures: Removal of necrotic bone from phalangeal joint, June 15, 1912. Gangrenous process promptly arrested by rest and bathing. Duration of treatment, one month. Result, cure.

Patient last seen, Jan. 25, 1913. For about a year and a half he has had plantar ulcers on both feet. The patient is a waiter and, owing to the condition of his personal affairs, is compelled to work most of the time. The more or less continuous standing on his feet prevents the ulcers from healing.[1]

CASE 14.—June 12, 1912: E. R., man, aged 59. Diabetes two years; local trouble, six months. Examination: Extensive gangrenous ulcer on the outer side of the right foot. Fifth toe and its metatarsal already removed. Marked edema of the foot and ankle. General condition fair. Occasional rises of temperature as high as 102.5 F.

Sugar, 1 to 2 per cent. Acetone, trace. No diacetic acid. Radials slightly thickened. Popliteal pulse felt. No posterior tibial or dorsalis pedis pulse felt. Blood-pressure, 150 mm. Hg.

Routine conservative treatment. Operative procedures: Curettage of slough, Aug. 22, 1912.

At first there was some improvement under the conservative treatment. The sloughs separated partially and the granulations became cleaner. There was, however, no tendency toward healing and amputation below the knee was advised, but consent was refused.

Duration of treatment, two and a half months. No improvement.

Patient was last seen, Sept. 1, 1912. There was little change in the condition of the wound.

CASE 15.—June 28, 1912: C. S., woman, aged 77. Duration of diabetes unknown; local trouble, six months. Examination: Moist gangrene of the great toe, left foot. Gangrene well demarcated. Edema of the dorsum of the foot. General condition very poor. Advanced stage of senility present; also myocarditis and marked emphysema. Temperature 100.8 F. Severe pain in the foot. After two weeks development of septic symptoms with rises of temperature to 102 F.

Sugar, 1 per cent. No acetone or diacetic acid. Radials thickened. Popliteal and posterior tibial pulse felt. No dorsalis pedis pulse felt. Blood-pressure, 140 mm. Hg.

Routine conservative treatment. No local improvement; amputation out of the question on account of the patient's general condition. Patient so weak that it was necessary to discontinue the baking. Gradual decline of strength. Duration of treatment, one month. Result, death, July 28, 1912. Direct causes of death, senility, bronchopneumonia, pulmonary edema.

CASE 16.—July 6, 1912: J. K., aged 63. Duration of diabetes unknown; local trouble, six weeks. Examination: On the right foot a beginning gangrene of the great and second toe and a moist gangrene of the third toe. Gangrenous phlegmon, which had been incised, extending to the dorsum of the foot. Foul, purulent discharge from the wound. On the left foot a gangrenous ulcer on the outer side of the fifth toe. Moist gangrene of the inner side of the great toe. Foot edematous; another gangrenous ulcer over the internal malleolus. General condition poor. Patient very feeble. Temperature 102 F. Pulse 96 per minute.

Sugar, 0.3 to 0.6 per cent. No acetone or diacetic acid. Radials not thickened. Popliteal, posterior tibial, and dorsalis pedis pulse felt. Blood-pressure, 141 mm. Hg.

Routine conservative treatment. Operative procedures: Amputation of third toe, right foot, after demarcation; incision of dorsal phlegmon, right foot, and plantar phlegmon, left foot, July 22, 1912. No tendency toward healing. Amputation of one or both legs out of the question on account of the patient's general condition. Development of marked septic symptoms with chill and rise of temperature to 103 F. Duration of treatment, one month. Result death, Aug. 10, 1912. Direct causes of death, sepsis, diabetic coma.

CASE 17.—Oct. 5, 1912: C. T. (same patient as Patient 3), man, aged 58. Diabetes at least two years; local trouble, one week. Examination: Moist gangrene of the great toe, right foot, with involvement later of the second, third and fourth toes and an advancing phlegmon of the dorsal and plantar regions. General condition fair. Temperature 104 F. Pulse 106 per minute.

Sugar, 0.3 to 0.9 per cent. Acetone, trace. Diacetic acid, trace. Radials thickened. No popliteal, posterior tibial, or dorsalis pedis pulse felt. Blood-pressure, 200 mm. Hg.

Routine conservative treatment. Operative procedures: Circular amputation of leg at junction of upper and middle thirds, Oct. 22, 1912.

At the beginning of the conservative treatment the temperature dropped to normal and remained so for one week. The gangrene and phlegmon then advanced and there were evening rises of temperature as high as 102 F. At the amputation it was found that the vessels were calcareous, but they bled freely. There was some sloughing of the flaps, but the demarcation was prompt and healing was rapid.

Duration of the treatment two and a half months. Result, cure

1. Since this paper was put in type this patient has again come under observation. On Feb. 10, 1913, he suddenly developed a gangrenous ulcer on the outer side of the plantar surface of the right foot. Within twenty-four hours there was a marked phlegmon of the ankle with a lymphangitis running up the leg. His temperature was 103.6 F. He was at once put to bed and the routine conservative treatment given. For a few days it seemed as if the limb were lost. On February 13 and on February 15 incisions were made into the infected cellular tissue at the ankle. The process gradually subsided and to-day (March 17) the patient is practically cured. The gangrenous ulcer is entirely healed, and the wounds at the ankle are small, superficial, and covered with healthy granulations. Incidentally the chronic perforating ulcers on both feet, which had been open for a year and a half as long as the patient was working, closed completely after one month's rest in bed.

Patient was last seen Dec. 12, 1912. There is a small, clean granulating wound in the center of the stump which is rapidly healing. The patient has already been measured for an artificial leg.

Reviewing the material to which I have applied the conservative method of treatment, it will be seen that in the seventeen cases, in three of which (Cases 9, 13, 17) the second foot of the same patient was affected, five patients died, a mortality of only about 29 per cent. One patient was not improved, but the remaining eleven were cured.

Four of the fatal cases (Cases 6, 7, 15, 16) were more or less hopeless from the beginning. In the only case (Case 6) in which a thigh amputation seemed indicated and was performed, the patient died two months after operation. Patients 7, 15 and 16 were in such a grave condition when they came under observation that any form of radical operation would have been out of the question and the fatal outcome would surely have been hastened by amputation of the thigh, or even of the leg.

In Case 9 I feel that an error in judgment was made. I relied on the fact that the same patient (Case 4) had made an excellent recovery after amputation of the great toe of the other foot and I believed that his general resistance and local condition were quite as good as they had been when that foot was treated over a year previously. The result proved that I was too optimistic and, if I had continued with ultraconservative methods and waited for further demarcation before amputating the fifth toe, I feel that I might have been able to record another recovery. The case was of the sluggish, chronic, non-progressive type, and only became acute after the operative interference. Aside from suffering severe pain and not sleeping the patient was in good condition and there would have been nothing lost by waiting, except the discomfort to the patient and the time I hoped to save. I think that the failure in this case merely serves to emphasize the importance of the fact that one cannot be too conservative and that much more harm can be done by doing too much than by doing too little.

The causes of death in the five fatal cases were pneumonia, sepsis and diabetic coma. Death was produced either by one of these conditions alone or by coma following one of the first two.

Of the eleven patients who recovered, nine (Cases 1, 2, 3, 4, 8, 10, 11, 12, 13) were cured with either no operative procedure at all or with more or less minor operations such as the incision of a phlegmon or the removal of a gangrenous toe. These patients were all finally restored to health with no more mutilation of the extremity than the loss of a toe or a portion of one. Three of these cases (Cases 8, 11, 12) showed most astonishing results from treatment. They were all very acute cases with high temperature and advancing gangrene with phlegmon. In Cases 8 and 11 there was a high percentage of sugar with large quantities of acetone and diacetic acid. In each instance it seemed as if there was not a chance in the world of saving the limb, while in one (Case 8) the patient's life was in imminent peril. I am certain that a few years ago we would have promptly performed a thigh amputation in these three cases and would have lost not only the limb, but probably the patient as well in each instance. After a short period of routine treatment the temperature dropped, the cellulitis subsided, the gangrene demarcated and the cases went on to uneventful recovery without radical operative interference.

Case 4 is worthy of special mention. This was a gangrene of the chronic type that had resisted treatment for six months. A very competent and conscientious surgeon finally advised radical amputation to which the patient refused to give his consent. I finally removed the gangrenous toe, instituted the regular treatment and the case went on to uneventful recovery. I shall refer later to the subsidence of the excruciating pains from which the patient suffered.

In two cases that ended in cure (Cases 5, 17) I was forced, on account of rapidly advancing gangrene with cellulitis and septic symptoms, to amputate the leg at the junction of the upper and middle thirds. Each of these patients has a useful stump and a movable knee.

The average duration of treatment was two and three quarters months.

As a rule, though by no means invariably, when the acute symptoms subsided the sugar percentage dropped considerably and the acetone and diacetic acid disappeared from the urine, if these had been present.

It must be admitted that there is a decided tendency to recurrence of the trouble with the extremities after the patient is cured, even when careful prophylaxis is observed. Still, this may manifest itself only in the shape of an occasional ulceration, which is not very malignant and which, if the foot is placed at rest and properly attended to, will heal more or less promptly. At any rate the first case has been comparatively well for over two years and not one of the cured patients has as yet had further serious trouble with that extremity.

One patient (Case 14) left the hospital against advice, unimproved. He had originally come in for an amputation, but was persuaded to submit to conservative therapy. At first there was some improvement, but after two and a half months it became evident that the gangrenous ulcer would not heal and amputation below the knee was advised. The patient, however, now withheld his consent. Judging from previous experience, I am convinced that, had this operation been performed, the patient would undoubtedly have recovered and I might have been able to add another cure to my report.

Unfortunately the series to which I have applied these ultraconservative measures has been limited to seventeen cases. I confess that the number is not sufficient from which to draw any broad general conclusions or to lay down any definite laws. Still no attempt at selection of the cases was made and the results as compared with those that are the rule when radical therapy has been resorted to must strike forcibly any one who has had any experience with these cases. It might be argued that amputation is required only in the really serious acute cases and that these cases are the ones which give unfavorable prognosis. Yet in former years, amputation was apparently indicated in almost every case and from my experience then, all cases gave an unsatisfactory outlook. Further a good percentage of my cases were very severe and in these even a goodly proportion of patients recovered. Though it is possible that I have been unusually fortunate in encountering a series in which there were a number of comparatively benign cases, I confidently believe that if this conservatism in the treatment of diabetic gangrene is adopted, there will be a decided difference in our results.

Returning to the three cardinal principles enumerated above, permit me on the basis of the clinical data presented, to go more into detail in their individual application.

### TREATMENT OF DIABETES AND PROPHYLAXIS AGAINST COMPLICATIONS

In regard to the systemic treatment of the diabetes and the prophylaxis against the development of dangerous complications, especially coma, I have little new to offer. This subject belongs more to the province of the internist and the specialist in metabolic diseases than to that of the surgeon. The best we can do is to adopt the rules laid down by von Noorden and others, the essential feature being the antidiabetic dietary regimen. Still there are certain practical points that are of special surgical interest.

The twenty-four-hour urine should be examined daily. It is especially important that specimens of the full twenty-four-hour urine be used, as the result of the examination of individual voidings may be very misleading.

If there is any evidence of an impending coma, such as mental sluggishness or delirium, or if the urine shows the presence of acetone bodies, the strict antidiabetic diet must be relaxed. The amount of sugar in the urine can be disregarded entirely. I give a cupful of oatmeal gruel twice a day to these patients, allow them a little bread and, to vary the monotony, a baked potato or some boiled rice occasionally.

As far as medication is concerned, I have no great faith in any of the various drugs recommended. When there is pain, I administer codein or morphin liberally. As to the use of alkalies, I regularly administer sodium bicarbonate in large doses. It must not be given in such large quantities that gastric disturbances result. A few teaspoonfuls in Vichy every two hours is about the limit of toleration. If given by rectum it is usually not retained. If given by hypodermoclysis, even weak solutions are irritating, and I have seen ugly phlegmons result (Case 6). By intravenous infusion large quantities could be given, but it should not be used in this manner in stronger solutions than 1 to 2 per cent. I have seen an alarming collapse after the use of a 2.5 per cent. solution (Case 6). The sodium bicarbonate should be added to a filtered and freshly prepared Locke's solution made from recently distilled water and pure chemicals. I am by no means convinced that this alkaline therapy is of much value. At times, I have felt that a coma was avoided by the use of sodium bicarbonate (Case 5 after an amputation), though I have never seen any direct changes in the urine as a result. I have never seen the drug benefit the patient in the slightest degree after coma has once been established.

I believe that chloroform should never and ether only very rarely be used in operations for diabetic gangrene. Nitrous oxid or nitrous oxid-oxygen anesthesia should certainly be the method of choice. This form of anesthesia answers the purposes in almost every case. Should it fail in exceptional instances, a small quantity of ether might be used. A water-bed, if necessary, bathing the back with alcohol, heel-cushions, etc., should be resorted to, to prevent bed-sores. Deep breathing should be encouraged, or better still a set of James' bottles should be used to ward off a pneumonia.

### IMPROVEMENT OF CIRCULATION

An attempt to improve the circulation in the extremity narrows itself down to the production of an active hyperemia by Bier's method. There are two means at our disposal, namely, hot baths and dry hot air. For the hot bathing sterile physiologic saline solution at a temperature of about 110 F. is used for a half hour, generally twice daily. If possible the entire limb should be immersed.

For the application of hot air we have been using the Tyrnauer electric oven at the German Hospital. The extremity must be very carefully wrapped and the entire limb should be inserted into a suitable oven. The oven should be warm when the treatment begins so that the patient is not put to the unnecessary strain of waiting in an uncomfortable position till sufficient heat is generated. It is advisable to accustom the patient gradually to the treatment by brief applications at a lower temperature. As a rule the maximum duration of the treatment should be half an hour and the highest temperature from 180 to 200 F. I must caution against too high a degree of heat. This is of no value and exposes the susceptible limb to burns, which necessarily should be avoided.

Though the expensive electric ovens may be rented in large cities, in private practice, I have found the Holzborn gas apparatus very satisfactory. It is inexpensive and answers the purpose admirably. If the patients stand the treatment I give a baking followed by a bathing twice a day. For some patients this is too much of an exertion and must be reduced. Some patients cannot stand the baking at all. In these cases we must be content with the less strenuous bathing.

That this hyperemic treatment does actually improve the circulation I am convinced. I have had very definite evidence of this in several cases. The most marked example is in Case 4. In the first place, at the first operation, before I began the hyperemic treatment, when I amputated the great toe, the flaps were absolutely bloodless. It was as if I were using an Esmarch bandage. At the second operation after eleven weeks of hyperemia, the parts were not only not anemic, but they bled very freely. An examination of the illustration will show a distinct division into two parts of the remaining toenails in this case. This change in the character of the nails dates to the beginning of the effects of the hyperemia. The nails, which had been brown, dry and brittle, became pink and pliable, showing that there had been a definite change for the better in their nutrition. Then the coldness of the extremity was no longer so apparent. With this direct objective evidence in the improvement of the circulation there was also a marked subjective change. The patient said that the foot felt warm. Most striking, however, was the gradual and eventually total cessation of the excruciating pains in the foot and leg due to the ischemia.

In Cases 5 and 17, in which I was finally forced to perform an amputation at the junction of the upper and middle thirds of the leg, the patients had had hyperemic treatment for four and two and a half weeks, respectively, before the amputation and the operations were very bloody. They were performed without the use of an Esmarch bandage. I firmly believe that the previous treatment with active hyperemia in these cases, while it did not save the feet, nevertheless helped to assure the success of the low amputation and hastened the healing process.

In most of the other cases, the formation of distinct lines of demarcation was noted soon after the beginning of the hyperemic treatment, the gangrenous or phlegmonous processes were promptly arrested, sloughing of the necrotic tissue was hastened and the granulations in the unaffected area showed an increased vitality. These granulations lost their pale, flabby character and showed a more marked tendency to bleed when touched. Just how this hyperemia does improve the circulation

I am not prepared to say at the present time. I believe that the most generally accepted theory is that this is due to the repeated dilatation of the superficial capillaries as a result of the application of the heat, and a corresponding reduction of the peripheral resistance to the circulation. I believe that the actual destructive and inhibiting effect of the heat on the bacteria is also no unimportant factor in limiting the infectious process.

A word of warning against the production of passive hyperemia by the application of the elastic bandage! Some men have used the Bier treatment in these cases in this form. Just as much as the active hyperemia is indicated here, just so much is the passive form contraindicated. Its use is not only illogical, but dangerous, for it adds to the anemic limb a venous congestion and increases the difficulties with which the arterial circulation has to contend.

On general principles, I administer sodium or potassium iodid on account of their absorbent qualities, and nitroglycerin as an arterial dilator.

### TREATMENT OF LOCAL INFECTION

The greatest individualizing must necessarily be practiced in the treatment of the local infection on rational general surgical and aseptic principles. I shall attempt to outline in a general way how a typical case should be handled. The patients should be kept at absolute rest and the strictest asepsis should be observed in the treatment of the affected parts. They should be constantly dressed with compresses saturated with a sterile physiologic salt solution. Antiseptics should be avoided because of their devitalizing properties. The dressings should be kept moistened; this also tends to produce a hyperemia, but I prefer not to use an impervious rubber tissue covering on account of the maceration that this produces. Tight bandaging should be avoided. The dressings should be changed at least twice a day. As a routine measure, I would recommend baking the extremity with the dressings on, allowing the dressings to soak off in the bath and then reapplying fresh dressings twice daily. All traumatism should be carefully avoided. The use of hydrogen peroxid is to be discouraged under ordinary circumstances, as it tends to dissect into unaffected parts. No attempt should be made to remove the sloughs forcibly. One should wait until the gangrenous tissue is well loosened and can be easily pulled off with a forceps. The whole method of treatment should be as expectant as possible. Wait, wherever possible, for a complete demarcation. The less active and energetic measures one uses, the less liability will there be to an extension of the phlegmon or gangrene.

As is well known, the tendency of the gangrenous and phelgmonous process is to extend first along the tendons and then along the muscle and fascial planes. Although inactivity is to be recommended, retention must not be permitted to occur, and if a pocket forms, or if there is an undermining with deep sloughing, these must be widely opened. On general principles, I object to local anesthesia, as the infiltration of the tissues tends to impair their nutrition, and I never use an Esmarch bandage.

When a definite line of demarcation has formed, the affected tissues may readily be loosened and removed with a few snips of a curved scissors. Usually no anesthesia is required. One should avoid cutting through non-affected tissue near the gangrene. If bony sequestra have loosened, they should be picked out with the forceps, but the sharp curet should not be utilized. Should the gangrene show progress and no line of demarcation form and should the phlegmon threaten to render the patient septic, notwithstanding extensive and repeated incisions, a more radical amputation obviously becomes imperative. When this is the case, I feel that an amputation just as far beyond the affected area as will insure operation in healthy tissue and at the same time give us a suitable amputation site—and no further—will answer the purposes quite as satisfactorily as the indiscriminate high thigh amputation.

Of course under these circumstances, reamputation may become necessary, and the latter type of amputation might eventually be required, but it appears to me that there is no urgency in taking this step—that the results will be just as good, as when this is done primarily, if not better and certainly no worse, and many a knee-joint will be saved that might have been unnecessarily sacrificed.

That the stump in an amputation above the knee is as useful functionally as one below the knee is an idea unsupported by a comparison of the two types fitted with artificial limbs and by the opinions of experts in the manufacture of these protheses. A point that is of vital importance is that the nearer one approaches the heart, the more of a shock to the system is the operation itself, and it behooves us to try first the least damaging and mutilating procedure. I think that the presence or absence of the popliteal pulse is not a matter of great significance. Deep-seated, rigid and calcareous vessels, though their lumens are not entirely obstructed, will give no pulsation. In Cases 5 and 17, there was absolutely no popliteal pulsation and yet the anterior and posterior tibial vessels bled freely. Even if the popliteal and anterior and posterior tibial vessels are entirely obstructed and the flaps practically bloodless, healing may take place without further gangrene. I have seen this phenomenon in a recent case of presenile gangrene and I believe that the same can occur in the diabetic type. As far as the Moszkowicz test to determine the site of amputation is concerned, my experience has taught me that one can place as little reliance on this as on the question of popliteal pulsation. In this test the lower limit of the secondary hyperemia occurring after the removal of an Esmarch bandage, which has been tightly applied to the thigh for a few minutes, is taken as the proper site for amputation.

The reason for the failure of this test in many cases will be clearly seen when it is understood, as I shall point out, that the elastic bandage will often not compress the atheromatous femoral artery and produce the primary anemia of the limb, so that there will be secondary hyperemia, although the flow of blood through the vessel may be quite considerable.

The presence of the acetone bodies in the urine has occasionally been regarded as an indication for amputation. A study of my cases shows that this factor may be disregarded entirely in this connection.

A word or two in regard to the technic of amputation. As emphasized above, it should be performed under nitrous oxid or nitrous oxid-oxygen anesthesia. The Esmarch bandage should not be utilized. Not only does the bandage produce unnecessary traumatism and further interference, if only temporary, with the circulation of an already poorly nourished limb, but it is usually an utterly useless step. The bandage will often have absolutely no effect as far as compressing the rigid artery and controlling the hemorrhage is concerned. One might just as well try to stop a leak in an iron water-pipe by tying a rubber band around the pipe above the

leak, as to control the bleeding with an Esmarch bandage in the majority of amputations for diabetic gangrene. On the contrary, the bleeding is often intensified because a venous stasis is produced without an arterial obstruction. These are no mere theoretical inferences. I have repeatedly seen practical confirmation of these statements.

The amputation should be done as rapidly and as simply as possible and with a minimum amount of traumatism to the tissues. Ordinary circular flaps should always be used as they insure the best possible nutrition. One should avoid osteoplastic operations and above all the flaps should be left wide open and the wound lightly tamponed with gauze. If this last step is observed the flaps are not subjected to the tension of sutures or adhesive strips and the possibility of septic retention following the sloughing of the skin and fascia, which occurs in almost every case, is eliminated. Finally, the dressing should be loosely applied.

Dr. Garbat has suggested to me that autogenous vaccination might hasten the separation of the sloughs and healing. Although I regularly use the autogenous vaccine in diabetic carbuncle I have had no personal experience with it in the infections resulting from gangrene of the extremity. I believe that the suggestion of Dr. Garbat is worthy of trial and I shall make use of it at the next opportunity. Judging from my experience in diabetic carbuncle, one should be careful in vaccinating the diabetic patient and not use too high a dosage. The diabetic is very susceptible and I have seen very severe local reactions follow the injection of moderately high doses. I have even had a suppuration at the site of injection after the inoculation of 400,000,000 staphylococci.

It might be in place here to emphasize the fact that prophylactic measures are of the utmost importance. The same rules apply to all cases of diabetes with the slightest tendency to circulatory disturbances of the lower extremity before the development of any real lesion, as apply to those patients who really have a gangrene or an infection resulting therefrom. Above all the chiropodist should be shunned. Many patients date the origin of their active disturbance to the clumsy and septic manipulations of a pedicure. Garters and stiff, tight shoes should not be worn and all pressure must be avoided. The feet must be kept scrupulously clean. They should be bathed and powdered religiously. Extreme care should be exercised in not injuring them and in not permitting them to become frost-bitten. An insignificant scratch, a slight abrasion should receive competent surgical attention. Ulcers, corns, ingrown toe-nails, bunions, etc., should be treated by the surgeon.

The methods of producing active hyperemia detailed above should be begun before the gangrene sets in and continued after the patient is cured so as to prevent a recurrence.

I wish to say one word in conclusion relative to the effect of this method of treatment in other types of gangrene. I have applied it to cases of presenile, senile and embolic gangrene, but the results are by no means as satisfactory. Although occasionally demarcation is stimulated and the patient escapes without radical operation, these cases, as a rule, come to amputation, at least of the leg. I presume that the reason for the relative failure of the conservative treatment in cases that are not diabetic is due to the fact that the lesion is solely a circulatory one and that the circulatory disturbances are too extreme to be influenced. In diabetic gangrene, while the circulatory lesion is an important one, it is usually not of such a complete nature and the systemic disease is at least partially responsible for the local trouble. Hence there is a chance of controlling the process in diabetes by improving the general condition, increasing the circulation in the extremity, and treating the wound itself according to the principles of aseptic surgery.

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## ADVICE TO PATIENTS ON LEAVING THE HOSPITAL AFTER SURGICAL OPERATIONS*

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Comparatively little seems to have been written on this subject, in spite of its importance. The character of the advice will of course depend largely on the nature of the operation and of the condition for which it was done; but there are certain general considerations which will apply to the majority of cases unless some special contra-indication exists.

It was formerly customary to keep surgical patients in the hospital, and even in bed, for what is now known to be an unnecessarily long time, thus adding to their expenditures, decreasing their incomes, and consuming time which could otherwise be more profitably employed. The sum total of the loss to the community from this source was enormous. Gradually we have learned to reduce this loss of time, to the advantage of the patients and to the general advancement of surgery.

Surgical patients on leaving the hospital generally pass from under the observation of the operator, especially those living at a distance. Unless the surgeon takes the trouble to advise them, their future mental and physical welfare will depend on their own ideas and on the advice of those around them, including perhaps their family physician. Most patients have a very hazy conception regarding their conduct, their actions often being largely governed by groundless fears and traditions and by the advice of ignorant or oversolicitous friends. Even the family physician, if consulted, is not always a reliable guide, because of unfamiliarity with surgical questions or of lack of knowledge of the individual case. These things are unfortunate, and militate against the prompt and smooth mental and physical recovery which should be the aim of every well-conducted surgical procedure.

To the surgeon all seems simple enough. With his superior knowledge it is difficult for him to realize the fears and uncertainties of the patient suddenly thrown on his own ignorant resources; and hence his instructions, if he gives any, are too often hasty, meager and but imperfectly understood. I am convinced that the whole subject deserves more attention than has hitherto been accorded it.

The following outline represents my own idea of the situation, which may not accord with those of others, but which will at least serve as a basis for consideration and discussion:

The surgeon should take time to talk over with each patient, before he leaves the hospital, his present condition, his prospects and his future course of action, explaining also, within the bounds of reason and expediency, the exact nature of the operation performed. As abdominal operations are the most frequent, I shall con-

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sider the advice to be given in connection with these; most of this advice applies to other surgical procedures also.

The patient should be told, when this can conscientiously be done, that the operation was successful and that everything necessary was accomplished. It should also be explained, when true, that the abdomen was explored wherever there was likelihood of anything being wrong and that everything was in perfect condition. This is an important point for the patient's future peace of mind, and hence, according to the most modern principles of surgery, such exploration should be done when practicable. It is well to make this explanation as emphatic as circumstances will permit, no matter what exception it may be wise to make to relatives and friends. For instance, one is usually justified in saying:

"Everything is all right; not only in the region operated on, but in the rest of the abdomen you are in just as good condition as any one else. I know this to be true, because I have examined everything carefully. Even if you feel more or less pain and soreness in the future, you must not think that they mean anything more than the natural consequences of a surgical operation.

"You must bear in mind that an operation is a severe injury, just as much as if you had fallen from a horse or had been run over by an automobile. The skin with its many small nerves has been cut, and the muscles separated and more or less strained and bruised, which is certain to produce soreness and stiffness that may persist for a long time, but which mean little and should be disregarded as far as possible. A similar soreness and stiffness would result from severe and unaccustomed physical exertion, such as climbing a mountain, but it would cause no anxiety and you would be sure of its speedy disappearance. The division of nerves in the skin may give rise to various uncomfortable sensations, such as numbness, oversensitiveness and even actual pain in the scar; but these manifestations mean nothing, should be given but little attention, and will surely vanish in the course of time.

"All of these disagreeable symptoms are apt to be more pronounced at night, while you lie quietly in bed, with nothing else to occupy your attention. This is largely owing to the accumulation of gas within the bowels, which presses on the sore places from the inside much as if you pressed on them with your hand from the outside. If you do not bear this in mind you are apt to imagine that some dire calamity is fomenting within you."

In addition to some such talk as the above, it may be stated that the soreness following an operation is likely to occur in periods, brought on perhaps by overexertion, indigestion, barometric changes, etc., but that these spells signify little and should cause no mental uneasiness; that if they are regarded too seriously and with the idea that something is wrong inside, they may increase to such a degree that the patient becomes a nervous, hysterical semi-invalid — a nuisance to herself, to her physician, and to all those who are so unfortunate as to be associated with her. I say *her* because such cases usually occur in women.

The effects of this sort of introspection may advantageously be illustrated by referring to the fact that many medical students develop symptoms of the various diseases which they read of and hear about in their lectures. The patient will also get a better understanding of the situation if she will sit quietly down by herself, hold up her little finger in front of her and look fixedly at it for fifteen minutes, concentrating her whole attention on it. Before the time has expired it is likely that the finger will be the seat of some very peculiar sensations, and there will be a strong tendency to give it a good rubbing. If this is true of a normal finger, how much more must it apply to the seat of an operation, with all the mysterious fears and uncertainties which surround it!

In order further to avoid the evils of introspection, the patient should be cautioned against describing the operation and the hospital experiences to curious friends. In fact the whole matter should be regarded as a more or less disagreeable episode, to be made little of and forgotten as soon as possible. In this connection the Germans have an excellent saying, *Schwamm darüber*—"sponge it out."

Emphasis should be laid on the fact that according to the mental attitude it is possible either quickly to overcome the effects of most operations or to nurse them along indefinitely, and develop a condition of semi-invalidism, by continuously "looking for trouble" and "making mountains out of mole-hills." Assure the patient emphatically that in your opinion she does not belong to this latter class of weak and nervous individuals, who are much to be pitied; but that you feel certain from your observation of her that she will conduct herself with sense and discretion and not allow herself to become hysterical and neurotic. It is often well to add that any nervous symptoms which may have bothered her in the past evidently had a good foundation, but that from now on there can be nothing to prevent her from rapidly regaining her normal equilibrium, and that you can easily see that she is one of those who are always cheerful, energetic and happy if only they have a fair chance.

Patients must be warned against trying to interpret their own symptoms; for even doctors, with their superior knowledge, cannot trust themselves to tell what is going on within their own bodies. Above all, allowance must be made for the advice and statements of friends. There is nearly always some woman who, without appreciating that she is doing harm, will fill the patient's mind with forebodings of disaster, such as the development of a hernia or the return of gall-stones or of a malignant growth. Especially is this true of the woman who opposed the operation and who consequently desires to be able to say "I told you so." Explain that these objectionable pessimists can know but little about the subject, and at best must base their predictions on very few observations; while your own opinion, as the surgeon in the case, is supported by the knowledge gained in operating, as well as by the dictum of the entire medical profession, grounded on years of experience and investigation.

### ABDOMINAL SUPPORTERS

Patients are always anxious regarding the character of abdominal supporters and the length of time during which they should be worn. The laity, as well as many physicians, regard them as of so much importance that the surgeon is compelled to give them an undue amount of attention. It should, I think, be explained that these "belts" are really of little service, except as they may confer a sense of security and comfort, or when ptosis exists. If there is a tendency toward rupture it will occur in spite of the belt, a fact that is quite generally recognized among surgeons. There is, however, such a strong prejudice in favor of belts that it would be unwise to advise against their use, for if any trouble should

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occur the surgeon would undoubtedly be blamed. Moreover most women are in the habit of wearing corsets and would feel uncomfortable without a support of some kind.

Fortunately a proper corset is just as good as a belt, or better. It should be of the long, "straight-front" variety and should be so laced as to push the whole abdomen upward. This may be done by employing two strings, the lower one being laced snugly and tied perhaps half-way up, while the upper one is fastened more loosely. It is neither necessary nor desirable to wear belts or corsets very tight. They should be used for purposes of support only and not for constriction and should never cause discomfort. No pads, bands or stays should ever rest directly on the incision; not only is such pressure useless, but also in recent wounds it may give rise to inflammation and pain, while in older cases it favors atrophy and weakening of the scar. I have often seen much distress caused by the pressure of a reinforcing band or a corset-stay. It should also be made clear that it is unnecessary to wear a supporter of any kind while lying down at night.

### DRESSINGS

When patients leave the hospital they are generally still wearing some sort of dressing held in place by a many-tailed bandage. They should be told that this is merely for the purpose of protecting the delicate scar, no virtue being attached to the cotton and gauze, and that the whole thing may soon be removed. Until then it is unnecessary to wear an abdominal supporter, its place being filled by the bandage. When the gauze and cotton are discarded they may be replaced by a folded handkerchief, if the cicatrix is still tender.

It should also be stated that all danger of infection ceases as soon as the wound is healed. If this is not done, those who have had this danger constantly paraded before them while in the hospital may remain uneasy for many weeks, as I have often seen.

### CONSTIPATION

Immediately following an operation it is usually necessary to employ cathartics freely, which naturally leads to constipation. If nothing is done to overcome this it may cause permanent impairment of the natural activity of the bowels, requiring a more or less constant use of drugs; hence it is well carefully to advise patients in this regard. There are doubtless many good ways of doing this, but I have found the following method efficient:

1. On awakening in the morning, before getting out of bed, knead the bowels deeply and thoroughly, following the colon, from the cecum to the sigmoid.

2. On arising drink a glass of cold water and take such calisthenics as are permissible under the circumstances, increasing these exercises as convalescence progresses.

3. Eat for breakfast such things as experience has taught are most likely to assist peristalsis—such as fruit and oatmeal.

4. Go to the water-closet as nearly as possible exactly at a stated time, the reason for this being that the bowels are "creatures of habit" and "slaves of suggestion." To those of regular habits the "suggestion" accompanying a certain time and place is sufficient to procure a movement; but if the time is allowed to pass on a few successive occasions, constipation results. Nothing should be allowed to interfere with this regularity, and all mental and physical exertion should, as far as practicable, be postponed until after the visit to the water-closet.

5. Stay in the water-closet for fifteen minutes, by the watch, without straining—just waiting.

6. If the attempt fails, as it often does at first, it will then be necessary to give the bowels some assistance, not with cathartics, because the more cathartics one takes the more one requires, but by the injection of a few ounces of cold water from a fountain syringe, or possibly by the use of a glycerin suppository.

Most cases of ordinary constipation will yield to this régime in a week or two, although some are stubborn enough to require more elaborate methods. Occasionally hormonal, agar, vibratory massage, or even dilatation of the sphincter may be necessary.

### DIET

The great majority of patients on leaving the hospital are in condition to resume their ordinary diet, but they are often afraid to do so unless informed of the fact, because they are convinced that some specific diet should follow every operation. The fact is, however, that convalescence if often retarded by a departure from customary habits of eating and drinking, which have become in a measure physiologic necessities.

There are, of course, certain cases requiring special systems of diet, which are often better prescribed by the physician than by the surgeon. For instance, in stomach cases the patient should be given a carefully prepared diet list and cautioned against overeating, while in genito-urinary cases the patients should be advised to drink water freely and avoid alcohol, etc., etc

### SOCIAL DUTIES, VISITORS, ETC.

Every operation means more or less nervous and physical strain, not only from the operation itself, but also from the apprehension and sleeplessness which precede and accompany it. The result is a decided loss of energy and resisting-power. Even prolonged rest in bed, without other cause, is productive of considerable weakness. Under these circumstances nothing is more exhausting to a convalescent than a too rapid resumption of social duties. Hence warning should be given against dinners, parties, receptions and theaters, and especially against receiving too many visitors and indulging in prolonged conversations.

As soon as one who has been operated on returns from the hospital, every acquaintance is curious to see the result and hear all about the operation, and the defenseless patient must again and again rehearse the whole experience in all its harrowing details. This is not only exhausting, both nervously and physically (no one knows how exhausting who has not been through it), but it also prevents the mind from getting into other and less morbid and introspective channels. In this connection it may be mentioned that one of the worst things a patient can do on leaving the hospital is to go to the home of a friend. This is nearly always a strain, because it entails certain social exactions which cannot be avoided and which interfere with that relaxation of body, ease of mind and freedom from obligations which are necessary to recuperation.

For all these reasons it is often desirable, when possible, for patients to go away and complete their convalescence in some interesting locality among strangers, surrounded by new scenes and free from the well-meant persecutions of their friends.

### REST AND SLEEP

Too much stress cannot be placed on the procuring of sufficient sleep; but unfortunately this is often difficult to get, owing to nervous irritability and social activity. Patients should be instructed to retire early and also to lie down for a short time at least once during the day. They must also be warned against the excessive use of hypnotics, which should never be taken except under the direction of their family physician, because the drug habit is easily acquired under such circumstances and its effects are disastrous.

### GOING UP AND DOWN STAIRS, RIDING, ETC.

Most people, for some reason, have an idea that it is harmful for those who have recently been operated on to go up and down stairs. In reality there is no danger in this except the danger of falling, which may, however, be considerable while the patient is still in a weakened condition.

Riding in almost any sort of a conveyance is nearly always permissible, providing the driver is reasonably cautious and the excursion is not too long. Street cars, railroad trains and sea-going vessels are seldom objectionable, although the question of seasickness must be considered. Horseback riding and bicycling must be approached with caution and should not be indulged in for at least a number of weeks, especially in cases of movable kidney or other forms of ptosis.

### EXERCISE

This is of much importance and should be encouraged, although it should of course be appropriate and judicious in amount. The patient must be made to understand that no one ever gets strong by resting too much, and that exercise and fresh air within reason are quite necessary to a rapid and satisfactory convalescence. It is especially desirable that the abdominal muscles, weakened and injured by the operation, should be strengthened by carefully graduated calisthenics, beginning with the lightest work, which is cautiously increased until the normal tone is regained. It is better for the patient to do this slowly and carefully than to permit the muscles to remain weak and atrophied until some sudden and unavoidable strain results in serious damage. Massage is often serviceable and should be recommended more often than it is when the means of the patient permit.

### RETURNING TO WORK

Most patients desire to know on leaving the hospital how soon they can safely return to their regular occupations. This is difficult to answer because it depends so much on the nature of the work. The tendency has always been to keep people idle too long, which is detrimental to them, physically, mentally and financially, and a loss to the community also. The idea should be to get them back to their avocations as soon as this can be done. It is often better, for instance, to permit a woman to resume within proper limits many of her household duties, rather than to insist that she sit around for weeks or months in enervating and useless inactivity.

In this connection it can be said that most abdominal wounds are as strong at the end of a month or six weeks as they will ever be; and other things being equal, the majority of patients can return even to quite heavy work at that time. If there is a tendency to the formation of a rupture it will come anyhow in spite of any reasonable care, so there is but little object in waiting longer. In appendix operations done with the gridiron incision the time of probation may still further be curtailed, even to so short a period as three weeks in some instances. In cases of movable kidney the wait must be longer—say six to eight weeks—while hernia occupies an intermediate position.

Women should not be in too much of a hurry to resume the care of small children, although this is exactly what the average mother of such children is anxious to do. It is wise to try to convince her that it is good for the children and develops their character and independence to be with others for a time, and that she, the mother, can do them greater justice in the end by properly recuperating before she returns to them.

### VARIOUS POSTOPERATIVE CONDITIONS

*Adhesions.*—The surgeon should not neglect to explain about adhesions, because if he does not mention the subject some one else will, and entirely wrong and disturbing notions may be the result. It should be explained that adhesions follow almost every abdominal operation, and that this is natural and proper. Nature has provided the omentum for this very purpose—to fasten together and protect internal wounds, just as we use adhesive plaster and dressings for similar purposes externally. It should be clearly understood that these adhesions are harmless, although they may pull uncomfortably for a time until they become stretched and adjusted to their surroundings. Also, it should be explained that, like the external dressings, they are usually temporary and that they tend to dissolve and disappear in the course of time.

*The Eyes.*—It is often desirable to direct attention to the eyes. If there is anything wrong with the accommodation of these organs, although the compensation may previously have been perfect, difficulty is apt to arise from muscular strain, following the weakening effects of a serious operation, which results in headache, dizziness and perhaps nausea. If these symptoms appear and persist, an oculist should be consulted.

*Bathing.*—Many patients are worried by an uncertainty as to when they may begin to take baths. It should be explained that "when a wound is well it is well," and that, other things being equal, they may begin bathing as soon as the wound is thoroughly healed and "dry"—usually in from two to three weeks after the operation.

*Menstruation.*—Unless something is said on this subject much uneasiness will result. It must be explained that irregularities of the menses often follow surgical operations; they may come too soon or too late, be too profuse or too scant, or even not appear at all for several months. Whatever occurs is of little importance and the function will adjust itself in the course of time without causing harm of any kind.

### CONCLUSION

The preceding imperfect consideration of an important subject is of course merely suggestive; there are many points which have not even been touched on. Operations other than abdominal require individual instructions according to the nature of the case and the characteristics of the patient. For instance, where the skull and brain are concerned, it should be understood that mental exertion and excitement must be avoided for an appropriate length of time; in genito-urinary cases much water and other liquids should be consumed with the exclusion of anything containing alcohol or other irritating substances; in amputations, massage of the

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stump should be recommended and attention should be directed to the occurrence and persistence of reflex pains and peculiar sensations referred to the absent foot or hand, which are often disturbing, especially if not correctly understood. Patients who have had rectal trouble, those, for instance, who have been operated on for piles, must be told to avoid for at least two weeks the passage of hardened feces, making use, for this purpose, of proper cathartics and of warm saline enemas before movements of the bowels, when this seems to be necessary.

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## THE PURITY OF COMMERCIAL SODIUM SALICYLATE*

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While certain manufacturers lay great stress on the superiority of sodium salicylate made from oil of wintergreen or oil of birch, examination of the various pharmacopeias discloses the fact that in laying down the requirements for sodium salicylate no stipulation or reference is made as to its origin.

Inasmuch as a considerable number of physicians have endorsed these claims the Committee on Therapeutic Research of the Council on Pharmacy and Chemistry of the American Medical Association undertook an investigation of the subject. Thus far two reports have been published: (1) the critical review of the literature by Eggleston,[1] which showed that in spite of the claims and intimations of some manufacturers the evidence in favor of salicylates made from natural oils is actually very slight and that the evidence against artificial salicylate is even less; and (2) the pharmacologic study by Waddell[2] which showed that there is no difference in the physiologic action of thhe synthetic and "natural" sodium salicylates. As a further contribution to this research the results of a chemical investigation are now presented.†

Salicylic acid was first obtained by Piria[3] (1839) from salicyl aldehyd by treatment with alkali, and shortly after (1843) Cohours[4] and, almost simultaneously, Procter[5] found that it could be prepared from the essential oil of wintergreen (*Gaultheria procumbens*). Following these discoveries it was found that salicylic acid could be obtained from many other plants and chemical compounds. Although some physiologic experimentation was carried out with it, salicylic acid continued to be merely a laboratory compound and was introduced into medicine only after Kolbe's[6] discovery of synthesizing salicylic acid from phenol came into use.

Kolbe (1860) prepared sodium phenolate from phenol and sodium hydroxid and, after drying the product, subjected it at 100 C. to the action of carbon dioxid. Then the temperature was gradually raised to 180 and sometimes to 220, near the end of the operation. In this method during the heating, about one-half the phenol distilled unchanged, leaving in the retort a residue of basic sodium salicylate. The aqueous solution of this residue was treated with hydrochloric acid, yielding a precipitate of impure salicylic acid. The first portions of the precipitate were rejected as tlfey contain resinous and coloring-matter; the subsequent portions were washed and distilled with superheated steam, resulting in a pure white product.

Kolbe's method was improved on by R. Schmitt[7] (1885), who, by saturating sodium phenolate with carbon dioxid at a low temperature and then heating the resulting product to from 120 to 130 C. in a closed vessel, obtained by molecular rearrangement sodium salicylate without formation of phenol as a side product.

These last two methods of producing salicylic acid and salicylates caused the wider study and use of these compounds, and soon salicylic acid made from natural oil of wintergreen and that made synthetically from phenol were used in medicine.

The earliest available published statement regarding the presence of an impurity in salicylic acid was that of Almén[8] (1877) who reported the presence of phenol in salicylic acid made synthetically from phenol. Shortly after this report Williams[9] (1878) isolated from 15 to 20 per cent. of a foreign organic substance which possessed properties similar to salicylic acid and which Williams called "cresyl-salicylic acid." This product of Williams was later more thoroughly examined and identified as cresotic acid. Squibb[10] (1883) stated that at that time even the better grades of salicylic acid contained from 4 to 5 per cent. of some impurity. Ewell and Prescott[11] (1888) devised a method for determining quantitatively homologous acids such as hydroxy-toluic and hydroxy-xylenic acids in salicylic acid. Fischer[12] (1889) stated that the chief impurities met with in commercial salicylic acid were cresotic, parahydroxy-benzoic and hydroxy-isophthalic acids and that the melting-point of salicylic acid was appreciably lowered by the presence of small quantities of cresotic acid; he further described a test for the presence of cresotic acids in salicylic acid. Charteris and Maclennan[13] (1889), as a result of animal experimentation, reported that salicylic acid made from natural oils was less toxic than that made synthetically. In the course of their paper they reported chemical work by Henderson, who was able to purify synthetic salicylic acid so that it possessed the same melting-point as that prepared from natural oil of wintergreen or birch. Although this product was apparently pure, its crystalline form was stated to differ from that of the natural acid. In the purifying process Henderson[14] isolated some impurity which he considered responsible for the toxic effects reported by Charteris.

In 1890 Dunstan and Bloch[15] took up the chemical examination of the product isolated by Williams and found both ortho- and meta-cresotic acids and in another specimen para-cresotic acid was found.

Using the method of Ewell and Prescott, Hesse[16] (1891) reported salicylic acid containing from 30 to 40 per cent. of foreign acids. In 1907 Carletti[17] published

*Contribution from the Chemical Laboratory of the American Medical Association. This investigation was undertaken at the request of the Committee on Therapeutic Research, Council on Pharmacy and Chemistry American Medical Association.

1. Eggleston: The Relative Value of the "Natural" and the Synthetic Salicylates, THE JOURNAL A. M. A., Dec. 7, 1912, p. 2057.
2. Waddell: Comparative Investigation of the Effects and Toxicity of Sodium Salicylates of Natural and Synthetic Origin, Arch. Int. Med., December, 1911, p. 748.

†This paper with full analytical details will be reprinted in the annual report of the Chemical Laboratory.

3. Piria: Ann. d. Chem., xxx, 165.
4. Cohours: Ann. d. Chem., xlviii, 60.
5. Procter: Am. Jour. Pharm., xiv, 211.
6. Kolbe: Ann. d. Chem., cxv, 201.
7. Schmitt: Jour. Prakt. Chem., 1884, series 2, xxxi, 407.
8. Almén: Am. Jour. Pharm., 1887, p. 292.
9. Williams: Pharm. Jour., 1878, series 3, p. 785.
10. Squibb. Ephemeris, i, 412.
11. Ewell and Prescott: Proc. Am. Pharm. Assn., 1888, p. 78.
12. Fischer: Ztschr. f. anal. Chem., Nov. 4, 1889, xxiv.
13. Charteris and Maclennan: Experimental Research as to the General Comparative Action of the Natural and Artificial Salicylic Acids, and Their Salts Brit. Med. Jour., 1889, ii, 1208.
14. Henderson: Jour. Soc. Chem. Indust., 1890, ix, 591.
15. Dunstan and Bloch Pharm. Jour., 1890, p. 428.
16. Hesse: Pharm. Jour., 1891, p. 174.
17. Carletti: Boll. Chim. Farm. Fasc., xi, 421.

a method of testing salicylic acid which showed the presence of phenol and the same year a report from France stated that specimens of salicylic acid were found to contain phenol. Pancoast and Pearson[18] (1908) and Engelhardt and Jones[19] (1908) published methods for distinguishing natural from synthetic oil of wintergreen, natural from synthetic salicylates and for detecting the presence of cresotic acid.

If the preceding reports are to be trusted, salicylic acid and salicylates at one time were highly impure and contained such impurities as cresotic acids, phenol, parahydroxy-benzoic acid and hydroxy-isophthalic acid.

In view of the quality of salicylic acid in the past, it was decided to determine whether or not any of the above-mentioned impurities existed in sodium salicylate as found on the market to-day. In these tests it was thought desirable to use both the methods employed by the authors quoted above and those prescribed in the United States Pharmacopeia, eighth revision. Accordingly eleven brands of sodium salicylate, including those used by Waddell in his pharmacologic work, ranging from the cheapest commercial bulk sodium salicylate at $0.45 per pound to the highest-priced "Sodium Salicylate from True Natural Oil of Wintergreen" listed at $14 per pound, were purchased and examined.

While the recommended tests for phenol, parahydroxy-benzoic acid and hydroxy-isophthalic acid are practical, those recommended for cresotic acid were found to be unsatisfactory. Beyond the tests quoted above the literature contained no available methods for the detection of small quantities of cresotic acid in salicylic acid.

In attempting to follow the methods employed by the earlier investigators it was found that the given details of the methods were insufficient or the methods were applicable only where large quantities of impurities were present. Thus Williams, who reported that he separated cresotic from salicylic acid by the difference in solubilities of the calcium salts of these acids, merely outlines his procedure, omitting details which are essential in trying to repeat his work. In the same way the method of Ewell and Prescott for the determination of cresotic acid in salicylic acid is of use only where a large percentage of cresotic acid is present.

The method consists in titrating the acid suspected of being a mixture of cresotic and salicylic acids, with a standardized alkali solution and as the molecular weight of cresotic acid is greater than that of salicylic acid, a mixture of cresotic and salicylic acids would require less alkali for neutralization than the same weight of salicylic acid alone. But as there is a difference of only 0.67 c.c. tenth-normal alkali in the titration of 1 gm. of cresotic acid and the same amount of salicylic acid, the method is applicable only where the percentage of cresotic acid is very large.

Henderson, in working with Charteris and Maclennan, used Williams' method of detecting and separating cresotic acids, but no details are given and so this investigator could not be followed. Dunstan and Bloch separated cresotic acid from salicylic acid by fractional precipitation with lead salts, but this method is also of value only where a large percentage of cresotic acid is present. Fischer gave a detailed procedure for isolating small quantities of cresotic acid from salicylic acid but as it is practically impossible to carry out the method as described and still have enough material to apply the final test, the procedure was modified slightly in this investigation.

Carrying out the test in modified form, the results were varying and unsatisfactory, possibly the consequence of deviating from the described details, but under the circumstances the test proved of no value. Carletti's test for phenol was found to be a reliable test and when applied to the specimens of sodium salicylate under investigation showed the absence of this impurity in all cases. Working on known mixtures of cresotic and salicylic acids, the published results of Engelhardt and Jones, who used the Carletti phenol test for the detection of cresotic acid in salicylic acid, could not be duplicated.

Dr. Atherton Seidell, of the Hygienic Laboratory, Division of Pharmacology of the U. S. Public Health Service, and Dr. Robert M. Chapin, of the Bureau of Animal Industry of the Department of Agriculture, kindly consented to repeat the tests as published by Engelhardt and Jones with materials used in this laboratory. These chemists both reported that the tests as described gave no reaction with cresotic acids, confirming the results of this laboratory. In Pancoast and Pearson's paper the test of Cone[20] is recommended for detecting the difference between synthetic oil of wintergreen and the "natural" oil. This test was applied to sodium salicylate with the hope that it might show the difference between synthetic and "natural" salicylate, but the results varied, and often, when applied to sodium salicylate whose origin from natural oils there was no reason to doubt, were the opposite to those found by Pancoast and Pearson. Muter's[21] test for phenol in salicylic acid is based on the use of reagents which it was found gave the described test in the absence of phenol, and hence this test was not applied. Neither parahydroxy-benzoic acid nor hydroxy-isophthalic acid was found in any of the specimens of sodium salicylate examined.

The tests of the United States Pharmacopeia, eighth revision, were applied to all the specimens of sodium salicylate and showed that the quality of the product was good. On the whole the cheapest grades of synthetic sodium salicylate complied as well with the pharmacopeial requirements as did the salt of the "natural" acid. One of the requirements of the Pharmacopeia, namely, that the salicylic acid liberated from sodium salicylate on acidulating should melt at 156-157 C., showed, by the general compliance of the specimens, that no appreciable amount of cresotic acid could be present. A considerable amount of work was done with the view of devising a method whereby a small amount of cresotic acid could be detected, but so far, without success. Since May[22] and Stockman[23] have shown, however, that cresotinates have the same qualitative effects as salicylates, the presence of small quantities of cresotinates in salicylates could have no great quantitative effect.

The results of this investigation indicate that, except for some differences in the color of aqueous solutions, all the brands of sodium salicylate examined were essentially alike in properties and composition. As regards color of aqueous solutions, a variation exists from the colorless solution of the synthetic Merck's Highest Purity Crystalline to the decidedly brownish-colored solution of "natural" products of Lloyd and of Merrell.

18. Pancoast and Pearson: Am. Jour. Pharm., 1908, p. 409.
19. Engelhardt and Jones: Proc. Am. Pharm. Assn., 1908, p. 866.
20. Cone: Am. Jour. Pharm., 1903, p. 466.
21. Muter: Allen's Organic Analysis, 1907, II, part 3, p. 77.
22. May: Brit. Med. Jour., Sept. 18, 1909.
23. Stockman: Jour. Pharmacol. and Exper. Therap., November, 1912, p. 97.

Among the other brands of synthetic salicylates the solutions were slightly pink in the case of Squibb's, Pfizer's and Fuller & Fuller's and slightly yellow or light brown in the case of R. Stevenson & Sons, Merck's, Mallinckrodt and Powers-Weightman-Rosengarten.

Thus this investigation would seem to warrant the conclusion that the cheapest commercial synthetic sodium salicylate is the equal of the higher-priced brands of the synthetic kind or the costly "natural" product.

**In closing I wish to express my thanks and appreciation for the helpful and valuable suggestions and painstaking supervision of this work by Prof. W. A. Puckner, director of the laboratory of the American Medical Association.**

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# THE WASSERMANN REACTION IN DIABETES MELLITUS WITH SPECIAL REFERENCE TO ITS RELATION TO ACIDOSIS *

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## INTRODUCTION

On account of the non-specific antigen employed, the question is ever present whether conditions other than syphilis will give positive Wassermann reactions. Such conditions have been reported from time to time.

As early as 1908 Eichelberg[1] reported positive reactions in a series of scarlet fever cases. Marchildon[2] reported positive results in one case of appendicitis, one case of cancer and two cases of typhoid. Weil and Braun[3] reported positive results in cases of sepsis, cancer, typhoid, phthisis, typhus and diabetes. Wechselmann and Meier[4] and many others have reported positive results in leprosy. Boehm[5] and Reinhard[5] reported cases of malaria and beriberi with positive Wassermann reactions. Halberstaedter, Mueller and Reiche[6] have reported positive results in measles (nine cases), in varicella (five cases) and in pertussis (14 cases). Treuber[7] has reported one case of lymphosarcomatosis in which was found a positive Wassermann reaction. Semon[8] wrote that in eclampsia the Wassermann reaction is positive for two or three weeks following the convulsion and later the reaction is negative. Boas and Peterson[9] reported that with three out of sixty patients narcotized with chloroform positive reactions were obtained. Schmitter[10] and Dreyer[10] have found positive reactions in cases with lead-poisoning. Craig and Nichols[11] have found that cases which under normal conditions of diet and drink give positive Wassermann reactions will, following ingestion of alcohol (700 c.c. of beer, 240 c.c. of whisky during seven hours), give negative reactions for a period sometimes as long as three days. Later Craig[12] found that sterile serums giving negative reactions would give positive reactions when subjected to the growth of streptococci or of staphylococci. Rarely in other diseases, in non-specific cases, have Wassermann reactions been found positive. The only reference to a positive Wassermann reaction in non-specific diabetes mellitus is that of Weil and Braun.[3]

## STUDY AND CASE REPORTS

In the laboratory of clinical pathology of Cornell University Medical College cases of diabetes mellitus have been studied with reference to the relation of the acidosis to the Wassermann reaction. By the term "acidosis" is understood that condition of the patient in which there is present in the urine of the patient beta-oxybutyric acid and diacetic acid. We do not include cases of simple acetonuria under this term although it implies acidosis generally.

The first case was studied because the patient had been told that syphilis was the cause of diabetes, and, although he gave no history of venereal disease, he was very desirous of receiving antisyphilitic treatment. The Wassermann test was suggested to him, and the result was positive. Repetition of the test gave the same result, and antisyphilitic treatment was then instituted.

The result of the study of this case was the direct cause of the study in the other cases.

It is interesting to note that Erben[13] has found that lecithin and cholesterin are sometimes increased in the blood of diabetics and decreased in the red blood-cells of the same class of patients. Further study along this line is necessary to determine whether diabetes without acidosis differs in this respect from diabetes with acidosis, and whether such changes in the blood-serum account for the findings in this study.

## CASE HISTORIES

CASE 1.—*Patient.*—White man, aged 32. Father dead—cause unknown. Mother alive and well. One brother and one sister alive and well. No history of syphilis or of disease common to family. As a child the patient was always healthy; he had a much more robust adolescence than the average youth, and was a superb athlete in college. He was mentally and physically most proficient. He gave no history of syphilis or of other venereal disease.

*Present Trouble.*—In 1904 patient applied for life-insurance, and was refused on account of glycosuria. Patient then consulted his family physician, who put him on a strict carbohydrate-free diet. As time went on his disease passed from a mild to a severe type of diabetes. In 1909 at the time of taking this history his urine showed a persistent glycosuria on a carbohydrate-free diet, and an acidosis on a full carbohydrate diet. The results of several analyses are given in Table 1. At one time there were 50 gm. of beta-oxybutyric acid in the twenty-four-hour urine. The Wassermann reaction was markedly positive with four different antigens (guinea-pig heart extract, beef heart extract, acetone fraction from beef heart, acetone fraction from liver of syphilitic fetus). In spite of this it was not thought that the patient had syphilis, but it was felt that the positive Wassermann reaction and the patient's wishes justified the administration of mercury as a therapeutic test. Mercury was then given by inunction to the limit of toleration. There was no change whatever in the diabetes, as can be seen from Table 1. The Wassermann reaction remained positive during the treatment and subsequent to it.

* From the Laboratory of Clinical Pathology, Cornell University Medical College.

1. Eichelberg: München. med. Wchnschr., 1908, lv, 1206.
2. Marcallden, John W.: A Comparison of Alcoholic and Watery Extracts in the Serum in Diagnosis of Syphilis, THE JOURNAL A. M. A., Dec. 19, 1908, p. 2149.
3. Weil and Braun: Wien. klin. Wchnschr., 1908, xxi, 624, 656, 938.
4. Wechselmann and Meier: Deutsch. med. Wchnschr., 1908, xxxiv, 1340. Bruck and Gessner: Berl. klin. Wchnschr., 1909, xlvi, 589.
5. Boehm: Folia Serologica, 1909, iii, 108. Reinhard: München. med. Wchnschr., 1909, lvi, 2197.
6. Halberstaedter, Mueller and Reiche: Berl. klin. Wchnschr., 1908, xlv, 1917.
7. Treuber: Arch. f. klin. Med., 1910, ci, 20.
8. Semon: Ztschr. f. Geburtsh. u. Gynäk., 1910, lxvii, 773.
9. Boas and Peterson: Folia Serologica, 1911, vii, 643.
10. Dreyer: Deutsch. med. Wchnschr., 1911, xxxvii, 786. Schmitter: Deutsch. med. Wchnschr., 1911, xxxvii, 1030.
11. Craig and Nichols: The Effect of the Ingestion of Alcohol on the Result of the Complement-Fixation Test in Syphilis, THE JOURNAL A. M. A., Aug. 5, 1911, p. 474.
12. Craig: Jour. Exper. Med., 1911, xiii, 526.
13. Erben: Wien. med. Wchnschr., 1907, lvii, 2554.

TABLE 1.—THE WASSERMANN REACTION AND ACIDOSIS IN DIABETES MELLITUS, CASE 1*

| Date | Glucose gm. | Acetone and Diacetic Acid, gm. | Beta-Oxybutyric Acid, gm. | Wassermann | Mercury | Salvarsan |
|---|---|---|---|---|---|---|
| 9/ 9/09 | 322 | 0.024 | 1.244 | .. | ..... | ... |
| 9/12/09 | 112 | 0.199 | 11.765 | .. | ..... | ... |
| 10/19/09 | 223 | 0.107 | 9.133 | + | ..... | .. |
| 10/30/09 | 90 | 0.204 | 14.443 | + | inunction | ... |
| 11/ 5/09 | 123 | 0.184 | 12.743 | + | inunction | ... |
| 11/12/09 | 111 | 0.124 | 10.267 | + | inunction | ... |
| 11/18/09 | 248 | 0.089 | 8.136 | + | inunction | ... |
| 11/30/09 | 277 | 0.114 | 9.754 | + | inunction | ... |
| 12/15/09 | 245 | 0.107 | 11.978 | + | inunction | ... |
| 12/30/09 | 198 | 0.104 | 12.112 | + | inunction | ... |
| 1/30/10 | 344 | 0.076 | 5.187 | + | none | ... |

*The methods employed in the above determinations (and in all subsequent determinations noted in this paper) were as follows:
Glucose: Benedict titration method controlled by fermentation and polariscope.
Acetone bodies: Schaffer distillation method.
Wassermann reaction: The original technic with the above-mentioned antigens.

CASE 2.—*Patient.*—White woman, aged 20. Father and mother alive and well. No history of syphilis or of disease common to family. Patient was healthy and robust as a child. She had a very severe pertussis when 10 years old.

*Present Trouble.*—In August of 1911 urine was examined on account of polyuria and thirst. About 300 gm. of sugar were found in the twenty-four-hour urine. The von Noorden method of treatment was followed. The patient rapidly grew worse, and within a few months had a most severe case of diabetes. The Wassermann reaction was strongly positive. Mercury was given by inunction and later by mouth. The Wassermann remained positive. Two intravenous injections of salvarsan were then given. The Wassermann was still positive. Table 2 gives the record of results.

TABLE 2.—THE WASSERMANN REACTION AND ACIDOSIS IN DIABETES MELLITUS CASE 2

| Date | Glucose gm. | Acetone and Diacetic Acid, gm. | Beta-Oxybutyric Acid, gm. | Wassermann | Mercury | Salvarsan gm. |
|---|---|---|---|---|---|---|
| 8/28/11 | 300 | 0 | ..... | .. | ..... | ... |
| 9/15/11 | 288 | 0.029 | 0.112 | .. | ..... | ... |
| 9/28/11 | 296 | 0.134 | 1.113 | + | ..... | ... |
| 10/30/11 | 456 | 0.463 | 9.789 | + | inunction | ... |
| 11/15/11 | 423 | 0.532 | 18.233 | + | inunction | .. |
| 11/29/11 | 542 | 0.478 | 13.456 | + | mouth | ... |
| 12/14/11 | 428 | 0.674 | 15.587 | + | mouth | .. |
| 1/ 5/12 | 248 | 0.968 | 19.145 | + | mouth | 0.4 |
| 1/17/12 | 679 | ..... | ..... | + | mouth | ... |
| 1/24/12 | 543 | 0.879 | 18.198 | + | mouth | 0.4 |
| 1/30/12 | 657 | ... | ..... | + | ..... | ... |
| 2/29/12 | ... | .. | ..... | + | ..... | .. |

Mercury was given continuously to the limit of toleration from October 30 to January 24 of the following year. The salvarsan was given intravenously on January 5 and January 24 in doses of 0.4 gm. In spite of this treatment there was no change in the Wassermann reaction, and the diabetes became progressively worse.

CASE 3.—*Patient.*—White woman, aged 39. Father dead—cause pneumonia. Mother alive and well. No history of syphilis or of disease common to family. Childhood uneventful with no serious illness. Patient when 16 years old had pneumonia followed by a slow convalescence. No history of syphilis.

*Present Trouble.*—Three years ago the patient began to lose weight. Her attending physician diagnosed diabetes. She was treated by a strict diet with very little carbohydrate. Later the patient attempted to manage her own case. She ate largely of prepared "health foods." She came under observation eight months ago. At this time she had diabetes of a very severe type. The Wassermann was positive. Mercury administration was instituted and a full intravenous injection of salvarsan was given. The Wassermann remained positive. The diabetes was unimproved. Table 3 gives record of results.

TABLE 3.—THE WASSERMANN REACTION AND ACIDOSIS IN DIABETES MELLITUS CASE 3

| Date | Glucose gm. | Acetone and Diacetic Acid, gm. | Beta-Oxybutyric Acid, gm. | Wassermann | Mercury | Salvarsan gm. |
|---|---|---|---|---|---|---|
| 9/21/11 | 456 | 0.089 | 1.987 | + | ..... | ... |
| 9/26/11 | 409 | ..... | ..... | + | mouth | 0.6 |
| 9/30/11 | ... | ..... | ..... | + | mouth | ... |
| 10/15/11 | 562 | 0.097 | 2.520 | + | mouth | ... |
| 10/30/11 | ... | ..... | ..... | + | mouth | ... |
| 11/30/11 | ... | ..... | ..... | + | mouth | ... |

Mercury was given continuously from September 26 to Nov. 30, 1911, to the limit of toleration.

CASE 4.—*Patient.*—White man, aged 36. Father and mother alive and well. Three brothers alive and well. No history of syphilis or of disease common to family. Patient always healthy. No serious illness except pneumonia when 22 years old. No history of syphilis.

*Present Trouble.*—In January, 1911, patient was rejected for life-insurance on account of glycosuria. In February, 1912, he had a marked acidosis on a full carbohydrate diet, and a glycosuria on a carbohydrate-free diet. The Wassermann reaction was found positive. As in the preceding case, mercury and salvarsan were given. The symptoms of diabetes were unchanged. The record of examinations and treatment is given in Table 4.

TABLE 4.—THE WASSERMANN REACTION AND ACIDOSIS IN DIABETES MELLITUS CASE 4

| Date | Glucose gm. | Acetone and Diacetic Acid, gm. | Beta-Oxybutyric Acid, gm. | Wassermann | Mercury | Salvarsan gm. |
|---|---|---|---|---|---|---|
| 2/16/12 | 98 | 0.046 | 4.113 | + | ..... | ... |
| 2/20/12 | 477 | 0.025 | 2.234 | + | mouth | 0.6 |
| 3/ 9/12 | 243 | 0.052 | 3.879 | + | mouth | ... |
| 3/30/12 | ... | ..... | ..... | + | mouth | ... |
| 4/28/12 | ... | ..... | ..... | + | mouth | ... |

The mercury was given continuously from February 20 to April 28 to the limit of toleration. There was no change in the diabetes or in the Wassermann reaction.

CASE 5.—*Patient.*—White man, aged 28. Father and mother alive and well. No history of syphilis or of disease common to family. Childhood uneventful with no serious illness.

*Present Trouble.*—Patient well up to 1908, when he began to lose weight. He consulted a physician, who diagnosed diabetes. In December, 1911, he came under observation. At this time his urine showed a severe glycosuria, but an absence of acetone bodies. His Wassermann was negative. On strict carbohydrate-free diet acetone in small amounts appeared in the urine, but at no time was diacetic acid or beta-oxybutyric acid present. His Wassermann remained constantly negative. The details are given in Table 5.

TABLE 5.—THE WASSERMANN REACTION AND ACIDOSIS IN DIABETES MELLITUS CASE 5

| Date | Glucose gm. | Acetone Bodies | Wassermann | Diet |
|---|---|---|---|---|
| 12/ 2/11 | 362 | none | — | regular |
| 12/15/11 | 40 | acetone trace | — | strict |
| 12/29/11 | none | acetone 0.029 gm. | — | strict |
| 1/17/12 | 113 | none | — | liberal |

CASE 6.—*Patient.*—White man, aged 56. Father and mother both died of typhoid in middle life. Patient had no brothers or sisters. There is no history of syphilis or of disease common to family. Patient says that he has never been sick. He denies syphilis.

*Present Trouble.*—Patient has had diabetes for the past fifteen years. He has had no treatment except at intervals.

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He has never been willing to diet as a mode of treatment. During the four years following 1907 his urine was examined repeatedly and at no time was there less than 100 gm. of sugar present in the twenty-four-hour urine. The Wassermann reaction was tested on Jan. 4, 1912; Jan. 19, 1912; Feb. 7, 1912; March 1, 1912. In every test the result was negative.

CASE 7.—*Patient.*—White, female, aged 35. Family history negative. Past history negative. Had a myomectomy in September, 1911. No history of syphilis or of disease common to family. Present history: About May 7, 1912, on account of placenta praevia an *accouchement forcé* was done. There had been bleeding for two months previous to this operation. On April 29, 1912, the urine showed marked trace of acetone, but an absence of diacetic acid and of beta-oxybutyric acid. A Wassermann made at this time was negative.

## SUMMARY

This study reveals the following facts:

1. Four cases of diabetes with marked acidosis. All four cases give positive Wassermann reactions which are unaffected by antisyphilitic treatment.

2. Two cases of diabetes in which urine shows no acetone bodies in one, and only a slight amount of acetone in the other. Both show negative Wassermann reactions.

3. One case of non-diabetic acetonuria with an absence of diacetic acid and of beta-oxybutyric acid. Wassermann reaction is negative.

A study of the relation of the acidosis to the Wassermann reaction in cases of non-diabetic acidosis in which is found diacetic and beta-oxybutyric acids in the urine is very desirable for the completion of this report, but such a case has not been available for our use since the beginning of this study.

It is evident that syphilis was not an etiologic factor in any of the cases studied. It is also evident from a study of the cases of the first group that a positive Wassermann reaction is not indicative of syphilis in cases of diabetic acidosis. Cases in the second group (Cases 5 and 6) demonstrate that diabetic glycosuria in an absence of acidosis does not in these cases at least cause a non-specific positive Wassermann reaction. The case in the third group (Case 7) indicates that non-diabetic acetonuria with an absence of diacetic and beta-oxybutyric acids does not result in a positive Wassermann reaction in non-specific cases. The question is still open: Will non-specific cases in which is found marked acidosis of non-diabetic origin show positive Wassermann reactions, and what proportion of diabetic acidosis will show positive reactions?

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# INDUCED VARIATIONS IN THE AGGLUTINABILITY OF BACILLUS TYPHOSUS*

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It is well recognized that strains of the typhoid bacillus vary in the readiness with which they are clumped by a typhoid patient's serum, or even by a typhoid immune serum. These variations in agglutinability are so marked in freshly isolated strains of the microorganism that not infrequently it is impossible to identify them as true typhoid bacilli even by the use of potent immune serums until they have been grown for several generations on culture mediums. This failure in immediate identification at best delays diagnosis and has at times led to error.[1] The following observations made in connection with an extended study on the comparative immunizing value of various preparations of the typhoid bacillus offer some explanation of the inagglutinability of freshly isolated cultures, and suggest a possible means of avoiding it.

As a means of testing the efficacy of various methods of immunization, we have made use of the presence or absence of the "typhoid carrier" state in rabbits which may follow intravenous injection of a living culture, as was first noted by Blackstein and by Welch. Such carrier animals frequently retain the organisms in the gall-bladder with periodic invasions of the circulating blood for long periods of time. Apart from testing antityphoid vaccination on anthropoid apes (Metchnikoff and Besredka) the cost of which is prohibitive, we regard this condition in rabbits as presenting the experimental condition most analogous to human typhoid.

In identifying the organism, isolated from the blood of suspected carrier rabbits, it was found that on first cultures they failed to be agglutinated by a strong antityphoid serum (Titer 1:20,000 macroscopic method) obtained by immunizing rabbits with agar cultures of the organism. A further investigation of this phenomenon developed a set of conditions almost entirely analogous to that demonstrated by Bordet and Sleeswijk[2] in connection with the whooping-cough bacillus. A readily agglutinable culture of *Bacillus typhosus* after passage through a rabbit regularly fails to be agglutinated by the ordinary antityphoid serum (anti-agar-typhoid serum). Simple subculture of the agar cultivated organism on rabbit-blood agar or on bile bouillon for two or three generations leads to the same inagglutinability (negative in a dilution of 1:100, while the original agar strain agglutinates in dilutions of 1:20,000). The blood and bile cultures, however, are as readily agglutinable as agar strains by the serum of rabbits immunized against blood cultures. Three subcultures of the blood organism on agar restore the agglutinability by anti-agar-typhoid serum.

Absorption experiments show that, although the blood cultures fail to flocculate out with anti-agar-typhoid serum, they do absorb the agglutinin, as is shown by the failure of agar cultures to clump with such treated serum. In this respect, our results differ from those of Bordet and Sleeswijk. The reverse is likewise true, that is to say, agar cultures remove the agglutinins for both blood and agar cultures from anti-blood-typhoid serum.

A practical application of these experiments immediately suggests itself. It seems likely that freshly isolated, inagglutinable cultures of *B. typhosus* would be agglutinated if tested with an antiserum obtained by immunizing animals with cultures grown on rabbit (or possibly only on human) blood agar. After waiting in vain for some time to encounter such a freshly isolated inagglutinable strain of *B. typhosus*, we offer this suggested method in order that others with more fresh material at their disposal may determine its value.

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1. See Paltauf: Die Agglutination, Handbuch der pathogenen Microorganismen, Kolle & Wassermann, Edition 2, 1912, ii, 505.
2. Bordet and Sleeswijk: Ann. de l'Inst. Pasteur, 1910, xxiv, 476.

# SPOROTRICHUM SCHENCKII*

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Some of the results of work on the morphology and cultural characteristics of *Sporotrichum schenckii*, and the lesions produced by that organism are reported in this paper.

Any one watching the publication of new research work during the last two years must have been impressed by the growing interest in sporotrichosis. Since the first observations on the organism recovered by Schenck in 1898 from the human lesion, the number of yearly contributions to the subject has progressively increased. Within the past year an immense amount of work has been published from all parts of the world. Among the men who have been foremost in this line are Widal;[1] DeBeurmann and Gougerot;[2, 3] Page, Frothingham and Paige;[4] Greco;[5] Walker and Ritchie;[6] Lutz and Splendore;[7] Kren and Schramek.[8] Reports of human cases have come in from all sides until more than a hundred are on record.

It is interesting to note the wide-spread opinion that many of the refractory cutaneous lesions diagnosed as syphilitic and tuberculous are due to infection with the sporothrix. From the reports of human cases of pharyngitis due to this organism and the involvement of nearly every organ in some of the experimental animals comes the suspicion that its work may not be confined to the superficial abscess usually caused in the human subject. DeBeurmann, who, with his associates, has probably done more systematic work on the subject than any other man, states that he believes sporotrichosis deserves an important place in human pathology. Moure found that 11 per cent. of a series of surgical abscesses coming under his observation were due to sporothrix infection. The reports of spontaneous cases in rats, horses and mules and one case in a dog, together with experiments showing the saprophytic growth of the organism on vegetables and fruits and the successful infection of young animals by mouth, are suggestive of the wide distribution of the organism and of the ready opportunities for contracting the disease.

The organism can usually be recovered by curettement and cultivated on artificial mediums, but is demonstrated with difficulty in the direct preparations in which only the spores have been seen.

## MORPHOLOGY

The morphology of the sporothrix was first described in 1898 by B. R. Schenck,[9] who isolated it from an abscess on the arm of a man suffering from the infection. He describes a delicately segmented, branched mycelium of 1.5 to 2.0 microns in diameter, and spherical or slightly ovoid spores, 3 to 5 microns long, showing small, unstained areas.

In 1906 DeBeurmann and Gougerot began to publish the results of systematic work with the organism, which they have continued up to the present time. Within the past few months DeBeurmann has published a review of his work to date, one of the most comprehensive summaries of the work on this disease.[10] To Schenck's description he adds that the mycelia are curved, undulating, and usually parallel in arrangement, and that they produce few or no lateral spores. He also states that the spores are scarce or often absent.

DeBeurmann has described what he believes is a new species of sporotrichum, which has been given the specific name *beurmanni*. Matruchot, Pinoy and Vuillemin[10] have agreed with his conclusions. Together they base the establishment of the species *beurmanni* on the following main points in which it is said to differ from *Sporotrichum schenckii*: (*a*) the presence of sac-like enlargements of the mycelium containing spherical bodies which stain with difficulty and appear to be spores (these enlargements DeBeurmann terms "chlamydospores"); (*b*) the greater number and pedunculate nature of the spores borne on the mycelium; (*c*) the infrequent branching of the mycelium; (*d*) the lack of parallel arrangement of the mycelial threads described as characteristic of *Sporotrichum schenckii*; (*e*) the fermentation of saccharose.

The literature shows that some confusion has been caused by the creation of this new species, which is regarded by most American investigators as insufficiently established, and many of the supposedly differential points have been found in my own studies to be inconstant or altogether lacking.

Contrary to the experience of most other observers, Hektoen and Perkins[11] described a strain which showed the spores attached to the mycelium by short pedicles. They gave an account of the development of the organism with the elongation of the spore, and the formation of lateral and terminal buds which develop into mycelia and, in turn bear both lateral and apical spores.

Garin[12] has described interesting involution forms in addition to the typical morphology.

Ripal and Dalous[13] have described the manner of mycelial development and the pedunculate nature of the spores and have noted the vacuoles and moving granules in segments of the living mycelium.

Gougerot[2] has given an excellent technic for the cultivation of the organism (*Sporotrichum beurmanni*), and also for the diagnosis of the disease by bacteriologic examination, supplemented by serum reactions of agglutination and complement fixation.

Widal and Abrami[1] have described positive results with agglutinating serums and the group reactions with serums from cases of actinomycosis.

Arndt[14] has contributed a description of the clinical manifestations of sporotrichosis and a classification of the forms of the disease.

The following description of the form of the organism is based on my study of a strain isolated by Dr. John M. Armstrong of St. Paul, Minn., from a case of human infection,[15] and a second equine strain received from the University of Pennsylvania. While the form of the bacterium varies greatly on different mediums, the unstained organism grown on dextrose glycerin agar has been selected as typical.

The mycelium is enveloped by a thin membrane within which are clear, cylindrical vacuoles placed usually in

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1. Widal and Abrami: Ann. de l'Inst. Pasteur, 1910, No. 24, 1.
2. Gougerot, H.: Folia Clinica et Microscopica, 1908-9, i, 263.
3. De Beurmann and Gougerot: Les Sporotrichoses, Paris, 1912.
4. Page, Frothingham and Paige: Jour. Med. Research, 1910, No. 18.
5. Greco: Argentina Med., 1907.
6. Walker and Ritchie: Brit. Med. Jour., 1911, No. 2635, p. 1.
7. Lutz and Splendore: Ann. d'ig. sper., 1907, xvii, 581.
8. Kren and Schramek: Wien. klin. Wchnschr., 1909, p. 1519.
9. Schenck, B. R.: Bull. Johns Hopkins Hosp., 1898, ix, 286.
10. De Beurmann and Gougerot: Arch. f. Dermat. u. Syph., 1911, cx, 25.
11. Hektoen and Perkins: Jour. Exper. Med., 1909, v, 77.
12. Garin, Charles: Provence méd., 1911, No. 18, p. 194.
13. Ripal and Dalous: Ann. de dermat. et de syph., 1910, ii, 372.
14. Arndt, G.: Dermat. Ztschr., 1910, xvii, 24, 171.
15. Armstrong, John M.: St. Paul Med. Jour., xiv, No. 4.

close apposition, end to end, and occupying most of the mycelial thread. At each end of these bodies is usually located a small refractile granule. In the old threads this detail becomes obscured. The segments become more distinct and the granules increase in number and vary greatly in size, showing a marked dancing motion. These dancing granules traverse the length of the segment, suspended in its fluid contents. The growing thread has either rounded ends or a constricted bulb-like process, like the cone of growth of a rhizoid. In old cultures segments of the mycelium, especially the terminal segments, are often greatly expanded and show within a thickened membrane clear, spherical bodies resembling those in the mycelium, which remain unstained by any of the methods employed. These sac-like enlargements of the mycelium are evidently the bodies termed "chlamydospores" by DeBeurmann, who holds them to be characteristic of *Sporotrichum beurmanni* and absent in *Sporotrichum schenckii*. The spores are produced laterally on the mycelium on short, delicate pedicles, or in clumps at the ends of the short branches. Free spores are numerous in the older cultures, often forming long chains without mycelial attachment. They are ovoid at first but become nearly spherical after breaking away from the thread. When stained, they present a coarsely granular body enclosed within a well-defined membrane, which, at times, strongly resembles a capsule. This membrane can be readily demonstrated by suitable stains. It is persistent on most artificial mediums, and is usually to be seen in preparations made from animal tissues and pus.

Considerable variation in form and number of spores occurs in different mediums. The most marked deviation is in blood-serum, where the organism shows little mycelial growth with the production of long, oval, spindle-shaped spores, having clear, unstained terminal areas (Fig. 1). The spores seen in sections of tissue lesions are very similar.

### MORPHOLOGY IN TISSUES

In the tissue the organisms are difficult to see after the ordinary tissue stains, but they can be demonstrated clearly at the periphery of the areas of necrosis by a modification of the Gram stain. This modification consists in steaming for one minute with the anilin methyl violet and counter-staining lightly with alcoholic eosin, instead of aqueous fuchsin. The organisms are decolorized by alcohol unless heat is applied. By this method the spores can be more easily demonstrated than by the Gram stain used for this purpose by Hektoen and Perkins.[11]

The organisms in the tissue are typically cigar-shaped, although there is found to be great variation. They are larger than on artificial mediums, often reaching 6 to 8 microns in length. They often show transverse dark bands, or large granules with lighter areas between, and usually capsule-like membranes. Clear areas can usually be seen at one or both ends.

It was found to be impossible to demonstrate the mycelium in paraffin sections, although in one case it was clearly shown in direct preparations from a large abscess in the abdominal muscles and from the testicle of a rat. This animal was inoculated with a large subcutaneous injection of a broth culture of the organism beneath the skin of the back. After twenty-five days large abscesses had formed in the abdominal muscles and in the testicles, with extensive necrosis and the formation of large pus cavities, from which the mycelial forms of the organisms were recovered. Although a filtered culture was not used for the inoculation, yet the site of the lesions and the length of time between the inoculation and the examination seemed to justify the conclusion that the mycelial threads developed *in situ* and were not of extraneous origin. Hitherto the demonstration of the mycelium in direct preparations from lesions does not appear to have been mentioned in the literature. Contrary to the general experience, direct preparations which I made were usually found to contain numerous spores of the form described above, which were often Gram-negative.

The organism grows by the elongation of the spore, which usually divides into two. Buds push out from one or both of these new spores and grow rapidly, forming the mycelium which radiates from the center (Fig. 2). Lateral branches form by the growth of some of the spores borne on the mycelium. Their pedicles lengthen and thicken and the branches push out at right angles to the parent thread. No evidence of the parallel manner of growth described by DeBeurmann could be seen.

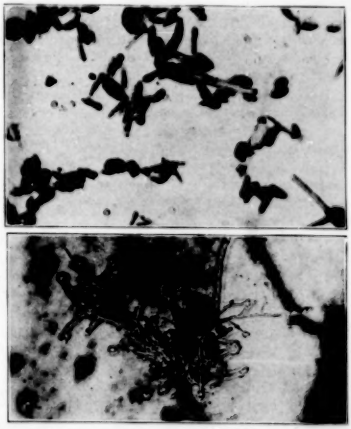

Fig. 1.—Six-day culture from blood-serum (stained with methyl thionin), showing numerous elongated spores and isolated segments of the mycelium (from photograph).

Fig. 2.—Growing organism (India ink and hanging agar block method, described in a previous article for which see Footnote 16) showing individual plants and method of branching (from photograph).

For photographing the living organism and demonstrating its modes and stages of growth a combination of the hanging agar block and India ink methods has been devised and described by me in a previous paper.[16]

### STAINING CHARACTERISTICS

The spores and young mycelia from artificial mediums are Gram-positive and acid-fast in many cases. The mycelia stain irregularly, and occasionally the deeply staining, spherical bodies mentioned by Page, Frothingham and Paige can be noted at intervals. The capsule-like membranes are not shown by this method. Azure, Loeffler's methylene-blue and Giemsa's stains give good results, but also fail to differentiate the membranes. Methyl thionin in saturated solution and Wright's stain

16. Taylor, K.: THE JOURNAL A. M. A., Aug. 10, 1912, p. 441.

are especially suitable for this organism. Of these two the former is the more satisfactory. Very good results are obtained by staining for one minute in this stain. The membranes are clearly shown, stained faintly blue. The spores stain a deep blue, the young mycelia a paler tint, while the old mycelia and the so-called chlamydospores take on a rich brown. Wright's stain gives a similar polychromatic result, but much slighter in degree. India ink smears or His' stain also demonstrate the capsule-like membrane.

### CULTURAL CHARACTERISTICS

The organism was grown on thirty different mediums. In general the growth on routine mediums corresponds with the descriptions given by DeBeurmann and others. A few points may be emphasized or added. The observations, with few exceptions, were made on five-day cultures.

On plain agar the growth is white, beaded and filiform, coriaceous, but with a viscid surface.

On glycerin agar the growth is more rapid and beautifully echinulate. In the broths growth is slow with the formation of rings, or glistening, flocculent masses, like snow crystals. The fluid remains clear. In glycerin broth a white, mold-like, coherent mass is formed.

On blood-serum the growth is slow, beaded and closely adherent to the surface of the medium.

Milk is coagulated with slight acid after fourteen days.

Dextrose is fermented after fourteen days.

Maltose, lactose, saccharose and mannite are not fermented within fourteen days.

No indol is formed in fourteen days' growth in peptone solution.

The organism fails to liquefy gelatin within fourteen days.

No growth occurs on Endo's agar or Conradi-Drigalski, or malachite green medium.

Slow growth takes place on neutral-red agar and broth, with no change in the reaction of either medium.

The addition of 1 per cent. acetic or citric acid to the amount of one drop per cubic centimeter of medium, or the addition of dextrose to the medium, stimulates growth.

Alkalinity of the medium retards growth. Sodium chlorid in considerable amounts fails to produce appreciable effect.

### PATHOGENESIS

Schenck[9] succeeded in infecting dogs and white mice with his strain of sporothrix. In four dogs he produced small local abscesses at the site of inoculation, from some of which he recovered the organism. White mice he found more susceptible. In several of these he produced small areas of focal necrosis in the liver and lungs by intraperitoneal inoculation, and found fragments of the spores in the lymph-nodes. Rabbits and guinea-pigs proved resistant.

Page, Frothingham and Paige[4] infected mice and white rats with a strain of *Sporotrichum schenckii* recovered from horses suffering from lymphangitis epizootica, a disease generally believed to be caused by this bacterium. They recovered sporothrix from the lesions. They also reported that fragments of the spores could be seen in paraffin sections of the tissues. Rabbits and guinea-pigs proved resistant.

Widal and Abrami,[3] with another strain, were able to show definitely the presence of the spores in the tissue. Rabbits and guinea-pigs were the animals used in their experiments.

Kren and Schramek,[5] in experiments on rats and dogs, found that nearly all the organs in the body might be affected, but they failed to find the spores in smears from the tissues and rarely in paraffin sections of the tissues themselves.

Hektoen and Perkins,[11] Bonnet,[17] Pinoy and Magrou[18] and others have inoculated animals and described the reactions following. Considerable variation has been found in the susceptibility of the various laboratory animals.

DeBeurmann has described the form of the sporothrix in the tissues and the tissue reactions. The form he described as an oval spore-like body, but believed it to be a modification of the mycelium, and not the true spore. The tissue reaction he gave in detail. Briefly, he found the lesions to show three zones: first, a central small abscess containing the bacteria and a mass of pus cells and necrotic material; next, a zone of epithelioid and giant cells; and third, a peripheral fibrocellular zone with infiltration of polymorphonuclear cells and connective tissue proliferation. In addition he has succeeded in growing the organism as a saprophyte on vegetables, fruits and insects.

The strain isolated by Dr. Armstrong produced the disease in three of our guinea-pigs and twelve rats. From two of the guinea-pigs and six of the rats the bacterium was later recovered, grown in artificial mediums and identified. The other six rats showed the gross lesions, but the organism was not recovered nor seen in the direct preparations from the lesions of the three which were killed. The other three recovered. In none of the animals was the disease fatal, although nearly all showed gross lesions and marked cachexia. Subcutaneous, intraperitoneal and intratesticular inoculations were used. The latter proved most reliable.

Three rats which failed to develop symptoms after the first subcutaneous inoculation, consisting of 2 c.c. of a six-day broth culture, which was effective in most cases, were reinoculated three weeks later in the peritoneum with three times that amount of a similar culture. All three animals failed to develop signs of sporotrichal infection, nor could any internal lesions be found when the animals were killed, after four weeks. Another rat, which had been inoculated and had developed subcutaneous abscesses, was reinoculated three months after all the lesions had healed with a large amount of a six-day broth culture of the organism. This animal also failed to show any signs of reinfection.

### PATHOLOGY

In nearly all of the animals abscesses discharging externally appeared within twenty-one days; in some, numerous small abscesses of the peritoneum, and in one, a large abscess in the abdominal muscles. The testicles, in these experiments, usually showed marked swelling, inflammatory adhesions to the tunica, and abscesses which ultimately discharged through the skin. On section, a thick, yellow pus was evident. The microscopic picture showed extensive edema and necrosis involving sometimes the whole organ. The epididymis was affected by a process similar to that in the testicle. The bladder was usually distended with a purulent fluid. The spleen and lymph-nodes were enlarged and sometimes showed focal necroses, with increased eosinophil and polymorphonuclear cells.

The muscular abscesses showed great necrosis and extensive edema and degeneration of the surrounding

17. Bonnet, L. M.: Rev. de méd., 1911, p. 99.
18. Pinoy and Magrou: Compt. rend. Soc. de biol., 1911, lxxi, 387.

muscle. The cellular infiltration was similar to that in other locations, small mononuclear cells predominating.

Abscesses of the peritoneum and especially in the mesentery were of common occurrence after intraperitoneal inoculation.

In general, the lesions may be described as granulomatous. There is usually a central area of necrosis, surrounded by a zone of dense cellular infiltration, the preponderating cells being polymorphonuclear in type. About this zone is an extensive area showing congestion, hemorrhage, infiltration of large cells with eccentric vesicular nuclei and homogeneous eosinophilic cytoplasm. There is also infiltration of large numbers of small mononuclear cells and eosinophils. Marked proliferation of connective tissue is shown in this region, and giant cells are of frequent occurrence. The spores of the organism are demonstrated in nearly every case by the modified Gram stain described above. The spores prove to be distributed throughout the lesions, but are usually most numerous and most easily found at the periphery of the necrotic area. They are usually intercellular. The mycelium could not be conclusively demonstrated in paraffin sections.

## SUMMARY

The following observations made in connection with the present study may be briefly formulated again, as follows:

1. The spores of the organism were attached to the mycelia by short pedicles.

2. So-called chlamydospores were of frequent occurrence.

3. Spores, similar in form to those grown on blood-serum, could usually be demonstrated in paraffin sections of the tissue lesions, and shown in most cases in direct preparations from the abscesses.

4. In one case it appeared that mycelial growth took place in the necrotic tissue at the center of a large abscess caused by the organism.

5. Methyl thionin proved best for staining the organism grown on artificial mediums, and a modification of Gram's stain most satisfactory for its demonstration in the tissues.

6. The organism failed to liquefy gelatin after six weeks' growth at room temperature.

7. Milk was coagulated after two weeks' growth at room temperature.

8. Some hint of the possibility of producing an immunity in animals by previous injection of small doses of pure culture may perhaps be based on these observations. There is however insufficient basis for any definite statement.

I wish in conclusion to express my thanks to Dr. W. P. Larson of the University of Minnesota for his valuable criticism of this paper.

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# PYELOTOMY FOR THE REMOVAL OF RENAL CALCULI*

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In the removal of calculi from the kidney we aim to do as little damage as possible to the secreting structure. The first to suggest removal of calculi through an incision along the convex (outer) border of the kidney was Henry Morris, in 1880. For many years this was the only method in general use and the term "nephrotomy" was applied to it, no matter whether the incision was only large enough to introduce the index-finger or whether the incision bisected the kidney in the same manner as we open it at autopsy. With the development of radiographic technic, a new era began and the ability to determine accurately the location, form, size and number of calculi in the kidney made it unnecessary to remove every calculus, no matter what its size or location might be, through a nephrotomy incision. The demand for some other method, especially for smaller calculi located in the renal pelvis, became especially urgent when reports of postoperative bleeding and other sequelae of nephrotomy began to accumulate.

Strange to say, the removal of calculi through an incision into the renal pelvis, technically termed a pyelotomy, was suggested by Czerny in the same year that Morris first performed nephrotomy. The operation of pyelotomy was employed rarely, however, until within recent years. French surgeons have been the most enthusiastic advocates of the method, and thus pyelotomy has gradually again attained the important position which, in my opinion, it deserves as the method of choice in the removal of renal calculi. Of late, reports

* Read at the meeting of the Western Surgical Association, Dec. 20, 1912.

equally favorable to those of the French surgeons have come from the German clinics. In this country many surgeons still cling to the older operation of nephrotomy, and it is with the object of calling attention to the many advantages of pyelotomy over nephrotomy that this paper has been written. In order more fully to understand some of the points to be referred to in the description of the operation, a brief review of some anatomic facts is necessary.

Fig. 1.—Relation of arteries and veins to anterior surface of renal pelvis (Albarran).

Fig. 2.—Distribution of retropelvic artery (Albarran).

## ANATOMY OF THE KIDNEY

The renal vessels, both artery and vein, begin to divide just before reaching the inner or mesial border of the renal pelvis, so that the entire anterior surface of the pelvis is covered by the primary branches of the main artery and vein. These relations are well shown in Figure 1. For this reason an incision into the anterior aspect of the pelvis is impracticable, on account of the intimate relations of so many arterial and venous trunks to this surface. The chief or primary arterial branch supplying the upper pole gives off a fair-sized vessel just before entering the substance of the kidney. This artery winds around the upper border of the pelvis as a retropelvic artery, and, after arching across the posterior surface of the renal pelvis, gives off branches to supply the posterior half of the kidney. This retropelvic artery is quite constant, but fortunately it is so well within the hilum and so far away from the incision usually made through the posterior surface as to be practically a negligible factor. It is well, however, to watch for anomalies of this artery and to make the incision not too near the parenchyma of the kidney, i. e., a fair distance away from the junction of the intrarenal and extrarenal portions of the pelvis. Both the anterior and posterior surfaces of the renal pelvis are covered with a finely lobulated layer of fat. Some small veins are often found in this peripelvic fat layer. When these veins are severed, bleeding is easily controlled by a fine catgut transfixion ligature. Aside from these small vessels and the above-described retropelvic artery, the posterior aspect of the pelvis is by far the least vascular portion.

*Types of Pelvis.*—In the early history of pyelotomy but little attention was paid to the fact that not all kidneys possessed the same type of pelvis. In order to become proficient in the operation of pyelotomy, an operator must know that a number of different types of renal pelves exist. Although there are eight or nine different forms, it is necessary to bear in mind only the principal two, the ampullary (Figs. 2, 4 and 5) and the bifid types (Figs. 3 and 6). In the ampullary the ureter ends in a renal pelvis which has only a single cavity of fair size, from which short primary calices arise, which receive the papillae of the parenchyma. A calculus lodged in such a single sac-like pelvis is comparatively easy to extract unless it be tightly wedged in one of the short primary calices (Fig. 4).

Conditions are quite different, however, in the bifid (Figs. 5 and 6) or the still more complex trifid type of pelvis. In the bifid form, the renal pelvis proper is small and divides almost immediately into two relatively narrow primary calices which again subdivide in order to receive the papillae (Fig. 6). The frequency with which the various types of pelves occur has never been studied, so far as I am able to learn. In my own experience about 70 per cent. of renal pelves have been of the ampullary or single type, and about 20 per cent. of the bifid or double type, the remainder being made up of the other varieties. The relations of the renal vessels to the various types of the renal pelvis remain the same.

*Relations of Peripelvic Veins to Primary and Secondary Calices.*—A recent experience, referred to later under the technic, has stimulated a study of the relation of the calices into which the renal pelvis divides, to the chief branches of the renal vein. The latter, like the first divisions of the renal artery, lie in close relation to the anterior aspect of the pelvis, both within and without the kidney. Each papilla, moreover (Fig. 7), is surrounded by a network of veins which collect the blood returning from the renal parenchyma. For this reason a stone lodged in a narrow secondary calix or branch of the renal pelvis must of necessity

Fig. 3.—Relation of renal vessels to bifid type of pelvis (Albarran).

Fig. 4.—Typical ampullary type of renal pelvis (Albarran).

lie in close relation to some of these peripelvic veins. One can readily see how pressure atrophy of the only tissue, namely, the pelvic mucous membrane, separating the peripelvic vein from the stone, could occur, and the removal of the calculus be followed by a severe hemorrhage. It cannot be denied that the same accident might occur when the calculus is pulled out through a nephrotomy incision, as when it is loosened and pulled down, be it ever so gently through the pyelotomy incision.

Fig. 5.—Various types of renal pelvis (Albarran).

Fig. 6.—Typical bifid type of renal pelvis. Note small size of extrarenal portion (Albarran).

The relation of the branches of the renal arteries to the outer wall of the pelvis is not less intimate than that of the veins. No case has yet been reported of an arterial hemorrhage following pyelotomy similar to the decubital venous one which I report later in this paper. I mention these vessel relations to the outer aspect of the intrarenal portion of the pelvis because the operation of pyelotomy was at first limited to calculi lying loose in the renal pelvis or moderately tightly impacted in the point of junction of the ureter and renal pelvis. Of late, the sphere of usefulness of pyelotomy has been extended, especially by French surgeons, to the removal of calculi much larger than those for which the operation was originally suggested. In some of my own cases we have been able to remove calculi by this route which were lying in primary calices, i. e., in the first division of the ampullary type of renal pelvis. With one finger inserted through the pyelotomy incision and the fingers of the other hand palpating the outer surface of the kidney, one is astounded at the ease with which every portion of the renal pelvis, and even the calices and papillae emptying into them, can be felt and calculi localized. Such a bimanual palpation of the interior of the kidney has of course as its first requirement that the kidney can be brought well out into the parietal incision. My chief reason for emphasizing the intimate relations between the pelvic wall and the peripelvic vessels is to warn against any rough manipulations within the renal pelvis.

*Rôle Played by X-Ray.*—Granted that the patient has been thoroughly prepared and the plates are examined by one accustomed to interpret them, the present development of *x*-ray technic enables one to determine with more than a fair degree of accuracy the position of shadows with reference to whether they are in the renal pelvis or parenchyma. A shadow located on a level with and close to the transverse process of either the first or second lumbar vertebra (Fig. 8) is due, as a rule, to a calculus located at the junction of the ureter with the renal pelvis (ureteropelvic junction). Such a shadow may be triangular, round, or show a projection in a downward and inward direction. Zuckerkandl has recently directed attention to the characteristic nipple-like appearance of shadows at the ureteropelvic junction (Fig. 9). When a shadow of this shape and location is present, one can usually say in advance that the calculus can be removed by pyelotomy. No one will attempt to say, however, that every shadow located at the position just described is at the ureteropelvic junction. If the kidney lies lower than normal, the shadow may be due to a calculus in the upper half of the renal pelvis, or in the renal parenchyma, close to the inner or mesial border of a low-lying kidney (Fig. 10). On the other hand, the shadow may be due to a calculus in the lower half of the renal pelvis of a high-lying kidney (Fig. 11). Further experience will, of course, show more exceptions, but the interpretation of shadows located as just described (Fig. 8) will serve for the present as a working basis.

In the absence of other complications, pyelotomy can be considered as the ideal method for calculi at the

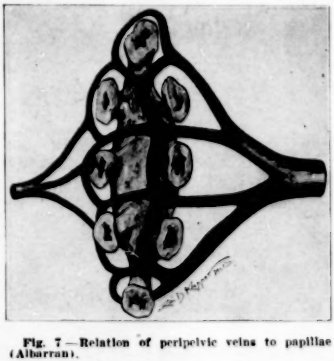

Fig. 7.—Relation of peripelvic veins to papillae (Albarran).

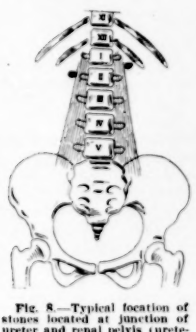

Fig. 8.—Typical location of stones located at junction of ureter and renal pelvis (ureteropelvic junction). Note exceptions in text.

ureteropelvic junction. A peculiar shadow may be the result of calculi located partly in the primary division of a bifid pelvis and extending into the ureter (Fig. 12), or when the calculus extends in a pipe-like manner for some distance into the ureter.

*Shadows Not at Ureteropelvic Junction.*—When the shadow is further away, i. e., outward, from a vertical line drawn through the outer ends of the transverse processes of the first or second lumbar vertebra, the calculus usually lies in a dilated calix or in the renal

parenchyma. If the shadows are multiple and are close together, the stones are probably in the renal pelvis (Fig. 12) or in a dilated calix, readily reached through the pyelotomy incision. When the shadow is single and a little farther out than where the ureteropelvic junction calculi are seen, the calculus is usually free in the renal pelvis or is lodged in a primary or secondary calix, and also easily reached through the pyelotomy incision. When the shadow is large and triangular, or coral-like (Fig. 13), or there are a number of shadows distributed over a wide area (Fig. 14), one of two conditions is usually found at operation: (*a*) either the renal pelvis is greatly dilated and filled by a large calculus, or (*b*) multiple shadows signify considerable destruction of the renal parenchyma. With such *x*-ray findings pyelotomy scarcely can be considered, although many of the French and German surgeons have become quite radical in combining incisions into the renal pelvis with those of the parenchyma in the removal of relatively large calculi located in the dilated pelvis.

It is beyond the province of the present paper to discuss the question of nephrotomy or nephrectomy when large or multiple calculi are present with extensive destruction of the kidney.

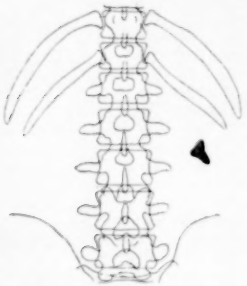

Fig. 9.—Tracing of skiagram of typical nipple-like calculus located at ureteropelvic junction (Dr. C. E. Kahlke's case).

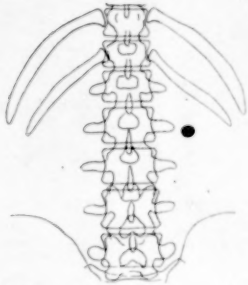

Fig. 10.—Tracing of skiagram of calculus located in upper pole of low-lying kidney. Illustrates exception to statement that shadows at this location are always due to stones at the ureteropelvic junction (Dr. G. Kollscher's case).

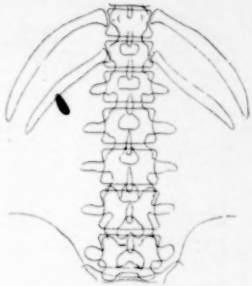

Fig. 11.—Tracing of skiagram of almond-like calculus located in lower pole of high-lying kidney. To illustrate exception to statement that shadows so located are due to calculi at ureteropelvic junction (author's case).

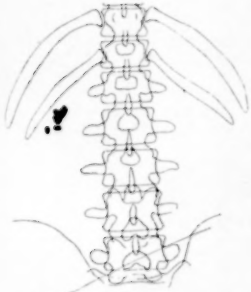

Fig. 12.—Tracing of skiagram of calculi located in lower primary calix of bifid type of pelvis. Recovered by pyelotomy (author's case).

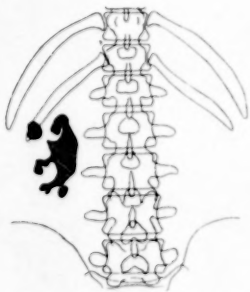

Fig. 13.—Tracing of skiagram of coral-like calculus occupying almost entire kidney (author's case).

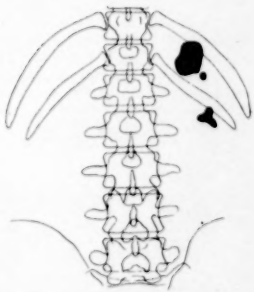

Fig. 14.—Multiple widely separated shadows lying in dilated calices of pyonephrotic kidney.

### TECHNIC OF PYELOTOMY

The method of exposure and of bringing the kidney into the wound does not differ in any manner from that employed for nephrotomy. In order to perform a pyelotomy, one must be able either to lay the kidney completely on its anterior surface, on the skin edges of the incision (Fig. 15), or at least to gain access to the posterior aspect of the renal pelvis without much tension on the renal vessels. If the pedicle is short or there is much fixation of the kidney by adhesions, pyelotomy is out of the question, and too much traction under such conditions will surely result in disaster.

In the majority of cases, however, pyelotomy is possible if the incision is not too small and the wound edges are well retracted.

The method which I employ is to insert two fine traction sutures through the wall of the renal pelvis on each side of the proposed incision. The wall is then incised and the opening enlarged in an upward and downward direction with fine scissors. The edges of the incision are now held apart by the traction sutures which have been previously inserted as shown in the diagram, Figure 16. This procedure causes no bleeding, as a rule.

Occasionally a small vein in the fatty layer surrounding the pelvis may require transfixion. Every effort should be made to conserve the fatty tissues immediately adjacent to the renal pelvis. Calculi lying at the ureteropelvic junction can usually be felt when the kidney is turned on its face (Fig. 15), and the incision through the pelvic wall can be made directly over the calculus. Through the pyelotomy incision one can introduce the index finger and palpate the entire interior of the pelvis. The extraction of calculi lying loose in an ampullary or one of the main divisions of a bifid pelvis is very simple.

That accidents can occur when a calculus is firmly impacted in a calix is shown by a recent case of mine. The calculus was firmly held in a calix of the lower portion of an ampullary type of pelvis; it was separated by the most gentle manipulation and extracted with a blunt instrument, without any immediate bleeding. Several minutes later a steady, quite profuse amount of venous blood began to escape from the pyelotomy incision. All efforts to check the bleeding, such as tamponade and transfixion ligation of the lower portion of the renal pelvis, were of no avail and it was necessary to perform a nephrectomy. Examination of the specimen revealed that the bleeding had its origin in a small vein, just outside of the renal pelvis, and in close contact with the calculus. The latter had probably caused a thinning of the wall of the vein and after the calculus was removed the pressure within the vein caused the weak intervening tissue to yield with resultant bleeding into the renal pelvis.

I have referred above to the close relation between the peripelvic veins and the pelvic mucosa. The occurrence of such severe bleeding even after the most gentle manipulation shows the necessity of bearing in mind these vessel relations.

After removal of the calculus or calculi, the incision in the renal pelvis is closed with 00 chromic gut sutures, which do not pass through the mucous membrane. If the urine is clear or contains only a small amount of pus, one can safely close the incision completely, insert a cigaret drain or small rubber tube down to the suture line, and replace the kidney. The danger of fistula formation is practically nil, provided that the ureteral lumen is not obstructed between the renal pelvis and bladder. It is advisable to pass a ureteral catheter down to the bladder before closing the pyelotomy incision. When the urine contains considerable pus and nephrectomy is contra-indicated, a soft rubber drain is sutured into the pyelotomy incision and brought out through the posterior end of the abdominal wound.

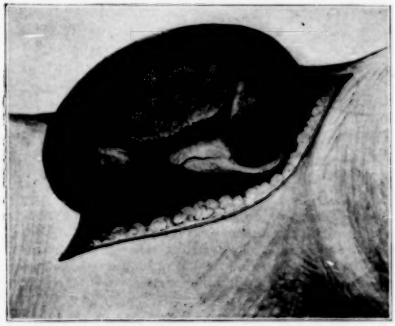

Fig. 15.—Posterior aspect of renal pelvis exposed in incision as first step of pyelotomy. Note avascular condition of the posterior aspect of renal pelvis.

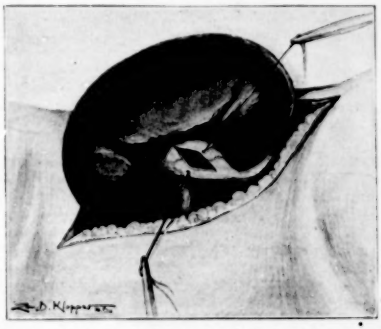

Fig. 16.—Renal pelvis opened by longitudinal incision and edges held apart by two traction sutures of catgut.

### COMPARISON OF NEPHROTOMY AND PYELOTOMY

*Advantages of Nephrotomy.*—1. Nephrotomy is preferable in cases in which there is a large branched calculus filling the renal pelvis, or in which there are many small calculi lying scattered throughout the kidney in closed cavities. In many of these cases, especially if the condition is a bilateral one, a finger inserted into the renal pelvis through a pyelotomy incision will aid in locating the calculi and they can be delivered through multiple small incisions through the convex surface of the kidney.

2. Nephrotomy is to be chosen in infected cases in which there is more or less destruction of the parenchyma. Here the question of whether nephrotomy or nephrectomy should be performed is to be considered, rather than any other operation. I cannot urge too strongly the necessity of ureteral catheterization of each kidney as a routine method before any operation for the removal of renal calculi. One never knows absolutely before operation whether the kidney must be removed; hence the obligation on the part of the operator of knowing the functional capacity of the opposite organ. In infected cases, when it is not necessary to remove the kidney, drainage is far better through a nephrotomy incision than through that of a pyelotomy.

3. Nephrotomy is the safer operation when the renal pedicle is short, or when there are extensive perinephritic changes which render delivery of the kidney into the wound very difficult.

4. The condition of the parenchyma can be determined much better through a nephrotomy incision. Much information as to the extent of destructive changes should have been secured, however, before operation, from the study of the clinical history, palpation, *x*-ray findings, functional tests and examination of the urine from each kidney.

*Disadvantages of Nephrotomy.*—1. The bleeding during the operation is far greater than in pyelotomy, even though the renal pedicle be well compressed. If the

nephrotomy incision be made just large enough to admit the index-finger, while the renal vessels are compressed at the hilus, the amount of blood lost, it is true, is usually slight. If the incision be more extensive, even though it be made behind the middle of the convexity, as Zondek has shown, the bleeding may be quite alarming, especially during the removal of a large branched calculus. The employment of bisection of the kidney has fortunately become greatly restricted through the greater accuracy of our radiographic technic.

2. The danger of hemorrhage following nephrotomy is by far the greatest objection, and has been one of the chief reasons for the rapidly growing popularity of pyelotomy. In addition to arteriosclerosis, hemophilia and imperfect suture of the nephrotomy incision, the most frequent causes of such postoperative bleeding are (*a*) the detachment of thrombi; (*b*) the septic erosion of vessels exposed in the line of incision, and (*c*) the bursting open of the nephrotomy wound when the ureter becomes obstructed by a blood-clot. Makkas[1] collected reports of nineteen cases, and Neuhauser[2] reports sixteen of Israel's cases. In ten of the latter, two patients died after the kidney incision had been tamponed, and in six it was necessary to remove the kidney, with three deaths, in spite of the secondary nephrectomy. Neuhauser speaks of the fact that a severe hematuria may occur after a pyelotomy, and my case, quoted above, confirms this. The danger of hemorrhage either during or after nephrotomy is much greater, however, as Haberer and others have shown, than after pyelotomy.

3. The danger of overlooking calculi, even with a good skiagram, is greater with nephrotomy than in pyelotomy. In the latter, one can palpate every portion of the pelvis and parenchyma bimanually, as previously described.

4. The danger of necrosis of the parenchyma following nephrotomy has no doubt been greatly exaggerated, but it is by no means a negligible factor in determining the method of operation.

*Advantages of Pyelotomy.*—1. Pyelotomy is the simplest and least serious method for the removal of calculi lodged at the junction of the ureter and renal pelvis, or for small or moderately large calculi, either free in the ampullary type of pelvis or in a primary calix of a bifid or trifid type of pelvis. Pyelotomy is also rapidly becoming the method of choice for small calculi lodged in the calices of the ampullary type of pelvis. Some operators combine transverse or vertical incisions into the parenchyma with pyelotomy for the removal of larger calculi.

2. It is the best method for calculi in one or both pelves of a horseshoe kidney, as well as in bilateral cases, especially in those complicated by anuria.

3. Hemorrhage is far less likely to occur either during or after pyelotomy than in nephrotomy.

4. Bimanual palpation of the pelvis and parenchyma lessens the chance of overlooking a calculus.

5. Pyelotomy can be done much more rapidly, and the period of convalescence is much shorter than in nephrotomy. It is seldom more than ten to fourteen days, in my experience.

*Disadvantages of Pyelotomy.*—1. Pyelotomy is contraindicated when the kidney is fixed by adhesions or the pedicle is short, or if extensive infection is present.

2. A fistula may persist after operation. The danger of such a condition is very slight, unless one has overlooked some obstruction of the ureteral lumen distal to the pyelotomy incision. A ureteral catheter should always be passed down into the bladder before suturing a pyelotomy incision.

3. The danger of bleeding either during or after operation, from the peripelvic vessels, although slight, must always be borne in mind.

In conclusion, let me add that I believe that pyelotomy is destined to become an active competitor with nephrotomy in the majority of cases. Many of the most prominent European surgeons are enthusiastic in speaking of the many advantages of pyelotomy, and the chief object of this paper is to call the attention of American surgeons to the many merits of the operation.

31 North State Street.

1. Makkas: Deutsch. Ztschr. f. Chir., cili.
2. Neuhauser: Folia Urol., iv.

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## A CASE OF PULMONARY INSUFFICIENCY*

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NEW YORK

Writers and clinicians consider pulmonary insufficiency the rarest valvular lesion of the heart. Of 24,000 admissions to the Johns Hopkins Hospital only three such cases were found, and of this number the diagnosis in only one was made during life.[1]

In my clinic at the New York Post-Graduate Medical School and Hospital, in which nearly 800 heart cases are studied every year, the following is the first one of its kind which has come to my notice in eleven years:

Mrs. J. S., aged 26, born in Hungary, no children, one miscarriage three years ago, had measles at the age of 2, and never any other infectious disease. Six years ago she was troubled with a cough which lasted six months and then abruptly disappeared. The patient tells of mild pain in the joints, but it never amounted to much. There is no such pain at present. July 1, 1912, the woman presented herself for treatment in the Medical Clinic of the Post-Graduate Medical School and Hospital. At this time the symptoms were as follows: moderate dyspnea on exertion, slight cough attended with scanty mucous expectoration; some cyanosis of lips and finger-tips; otherwise the patient appeared fairly well nourished.

Examination of the organs of the chest disclosed the following conditions: The lungs were normal. *Inspection* of the precordium showed a very slight displacement of the apex to the left of its normal position and a strong pulsation at the third left interspace, about ½ inch from the sternum. *Palpation* gave a very marked diastolic thrill over the third left interspace close to the sternum. *Percussion* indicated 1 inch enlargement of the right heart. There was little, if any, enlargement of the left heart. *Auscultation* revealed normal first and second sounds over the apex and the aortic area. The pulmonic first was quite accentuated; the second pulmonic was replaced by a loud blowing, diastolic murmur. The point of maximum intensity of the murmur was over the third left interspace. The course of the murmur extended from the second to the fourth left interspace along the left edge of the sternum, where it abruptly stopped. The pulse was full, regular and 80 to the minute. The pulse remained the same with the arm in the upright as in the horizontal position.

On these physical signs the diagnosis of pulmonary insufficiency was made. This diagnosis has been strengthened by the same findings on repeated examinations.

* Patient presented before the Clinical Society of the New York Post-Graduate Medical School, October, 1912.

1. Hirschfelder, A. D.: Diseases of the Heart and Aorta, Second Edition.

Besides the direct signs pointing unmistakably to pulmonary regurgitation, the diagnosis could be made with certainty by the process of exclusion.

Aortic insufficiency simulates pulmonary insufficiency in so far as it is characterized by a diastolic murmur which is heard at times over the pulmonic area and almost always over the fourth left interspace close to the sternum. But the aortic diastolic murmur is frequently heard over the aortic space as well as at the ensiform cartilage. No such transmission of the murmur existed or exists in this case.

Aortic insufficiency shows hypertrophy of the left heart; in this patient the right heart showed enlargement, scarcely any in the left.

Aortic insufficiency is associated with a jerking and collapsing pulse; here the pulse is normal. Aortic insufficiency produces throbbing of the carotid arteries and capillary pulsation; these are conspicuously absent in this case.

lesions of the heart, but under such circumstances the aortic and mitral valves are the target.

Ulcerative endocarditis is given as a cause for pulmonary insufficiency, but a history of that affection is lacking here.

Finally the regurgitation may be of congenital origin. If that were the case, however, one might reasonably expect another, associated, congenital lesion also; but even though we disregard that occurrence, the dyspnea, cough and cyanosis, which troubled the patient when she came for treatment, came rather late in the life of the lesion.

Further data concerning the case:

Blood-pressure: Systolic 110, diastolic 70; Wassermann negative (Post-Graduate Laboratory No. 1642); examination of blood (Post-Graduate Laboratory No. B-1633); erythrocytes 4,500,000 per c.mm.; hemoglobin 90 per cent. (Tallqvist instrument used); differential count (number of cells counted, 100): polynuclears 72; lymphocytes 21; mast-cells 1.

Fig. 1.—The electrodes are applied to the right and left arm and this arrangement is called Lead 1. (In all the records the space between the perpendicular lines equals one-fifth of a second in time, the space between the horizontal lines represents 2 mm. and a deflection of 10 mm. requires one millivolt of current.) The QRS complex is downward or negative.

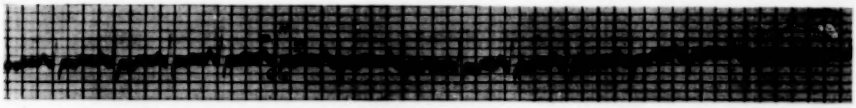

Fig. 2.—The electrodes are applied to the right arm and the left leg. The QRS complex is upward or positive.

Fig. 3.—The electrodes are applied to the left arm and the left leg. The QRS complex is upward or positive.

The next condition to exclude is a functional disturbance of the heart or deterioration of the blood, each giving rise to a functional or hemic murmur over the pulmonic area.

The presence of a diastolic thrill argues conclusively against such an assumption. Besides, except in rare instances of great loss of blood, a functional or hemic murmur is invariably systolic in time, and its line of transmission is upward instead of downward. The blood-count, as stated later, practically disproves the theory of anemia.

The cause of the pulmonary insufficiency in this patient is unknown and unaccountable. There is no history or evidence of venereal infection. The Wassermann test proved negative. Besides, luetic infection produces by preference deformity in the aortic valves. Neither is there a history of any other infection like typhoid, scarlatina, diphtheria or influenza. The only evidence of rheumatic infection is the occasional mild pain in the joints coming and going. Such pain, in my experience, is frequently associated with serious

A roentgenogram showed the enlargement of the right heart. The amount of enlargement tallied exactly with that found by percussion and my method of auscultation.[2]

Abdominal viscera and pelvic organs were in a state of perfect health. The tracings were made by Dr. Robert H. Halsey of the New York Post-Graduate Medical School and Hospital, to whom I desire to express my sincere thanks. Dr. Halsey's interpretation of the electrocardiograms is as follows:

"Two electrocardiograms were taken from patient Mrs. J. S. at intervals; they were identical. The interpretation of the curve depends on the identification of the deflections P, Q, R, S and T in the three leads. It is most important to identify R, whether it is to be considered a positive (upward) deflection or a negative (downward). The general rule established by Einthoven is: $R_1 - R_3 = R_2$. Applying this we find $R_1$ to be greater than $R_3$; hence $R_3$ is to be a negative deflection. A reversed or downward deflection of $R_3$, when the heart is in the normal position with some enlargement to the right, is to be regarded as due to hypertrophy of the right ventricle."

257 West Eighty-Eighth Street.

2. Abrahams, Robert: The Delimitation of the Heart by a New Method, Arch. Diag., April, 1912, p. 130.

# THE "NEW HEEL"

## WITH A PATHOGNOMONIC SIGN FOR DETECTING INFLAMMATORY LESIONS IN THE ANTERIOR ARCH OF THE FOOT

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The most frequent of all causes for painful feet is inflammation in the anterior arches. Of the sufferers who come for relief for foot conditions, the women patients especially—shall we say 100 per cent. of them?—have strained or broken-down anterior arches. It is, of course, true that in a great number of these cases the longitudinal arches are flattened also, so that there is pain in the foot due to stretching of ligaments and spasm of muscles; but still the inflammatory lesion, which is the main cause of the distressing symptoms, is situated usually in the anterior arch of the foot. I have seen a great number of cases in which the patients have worn all kinds of plates for years for their foot troubles, although their longitudinal arches were even normal—that is, as normal as they can be in shoe-wearing persons—and of course their plates ended where the real trouble commenced, so that while the longitudinal arches were supported and treated for years, the anterior arches, in which lay the site of the lesion, were left to themselves, unrecognized and untreated.

Fig. 1.—The "new heel." The most common deformity.

Fig. 2.—Position of patient and examiner in pathognomonic test for anterior arch lesions.

### ETIOLOGY OF THE "NEW HEEL"

The heel is the strongest part of the foot, and is constituted to carry the main bodily weight. The high-heeled shoes which women wear, however, practically compel them to walk on the heads of the metatarsals. Thus every time they take a step they jam the metatarsal heads on the ground. This carries with it an element of traumatism which, when cumulative, often results in an inflammation in the metatarsophalangeal joints of which the anterior arches are mainly composed. Not only does this inflammation affect the soft parts of these joints, but also, as often proved by skiagrams and operations on the foot, the periosteum and the cancellous portion of the bones are involved.

High-heeled shoes compel the anterior arches to assume the function of weight-carriers, which modifies them into weight-carrying structures or heels. Metatarsal walking increases the size and strength of the anterior arches and changes their flexibility and elasticity, which is essential to a normal gait, to rigidity which is essential to a weight-carrying structure. The anterior arches also become prominent and bulge on the plantar surface and are covered with callosities. In short, not only do the anterior arches perform, under pressure of the additional burden, the function of heels, but they acquire all the characteristics and every semblance of heels (Fig. 1).

### DIAGNOSIS

The diagnosis is self-evident when the new heel is developed. In this, however, as in all other forms of flat-foot, the amount of deformity is not always in proportion to the amount of pain. In fact, the painful stage usually comes before the appearance of deformity. Since the patient's symptoms may be very severe in this stage, while his arches look normal, there is danger of overlooking the trouble. Pain in flat-foot is due to a great many causes: the stretching of ligaments, spasm of muscles, inflammation of joints, the grinding together of small bones as they form new facets, and the accompanying periostitis. The reflex pains so often distressing in flat-foot are due to the inflammation involving the peripheral nerve-endings and also to pinching of nerves by the grinding bones. Naturally, also, the patient spares the inflamed portion of the foot, so that he strains certain groups of muscles; this, too, is a cause of pain.

These processes are most active in the early stages. In the chronic stage, hyperstretching destroys the elasticity of the ligaments, ankylosis cures the inflamed joints, the bones form new facets and are comfortable in their new position. Consequently, pain ceases in the chronic stage though deformity and impaired function has reached its maximum. A sign of anterior arch trouble, which after a great number of tests I am convinced is pathognomonic, is elicited in the following way:

The examiner grasps the toes of the patient and flexes them suddenly (Fig. 2). Sudden flexion is painless in the normal foot, but is extremely painful if there is inflammation in the anterior arch. The patient need not be asked if the act gave him pain, for a spasm of suffering sweeps over his face when it is done. Also the severity of pain is in direct proportion to the severity of the inflammation. The explanation for this test is that in disease of the anterior arch the patient unconsciously holds the toes extended. This position gives to the metatarsophalangeal joints the maximum space to accommodate the inflammatory product which is present when there is trouble with these joints. When the toes are flexed however, the spaces in these joints are suddenly lessened, which causes an increase of intra-articular pressure with distention of the capsules, etc., which of course is very painful. This sign is especially valuable, as it is present in the early stage of anterior arch inflammation long before the appearance of the deformity. The sign is absent only in very old and chronic cases. In these, manipulations are painless because, as was explained above, the trouble has progressed beyond the point of pain.

It should also be remembered that the metatarsophalangeal joints are subject to a great many diseases. Because of the traumatism which high-heeled shoes

inflict on these joints, their vitality is inevitably lessened, and they form a favorable soil for the deposits of various infections or toxins that may lodge in the system. Thus a primary joint lesion of either syphilis, gonorrhea or any of the countless forms of osteo-arthritis may appear in these joints. An example of this is shown in the accompanying skiagram (Fig. 3).

### TREATMENT

In the acute stage of anterior-arch inflammation the patient must be off his feet entirely. When this is impossible the anterior arches can be supported by felt. The benefit derived from this is due not only to the fact that the fallen arch is restored to its normal position, but also to the removal of some of the bodily weight from the affected parts because the felt raises the front part of the foot. When the inflammation is confined to one or two joints, relief sometimes is obtained by cutting a central opening in the felt and supporting the region around the affected part. Heat relieves pain temporarily, at least, and produces hyperemia, and is given either in the form of hot foot-baths (best effervescent) or baking.

In the chronic stage an anterior arch-support can be built into the shoe, or if there is a concomitant flattening of the longitudinal arches, a plate can be made having a metatarsal support as well. Often, however, the best results are obtained by simply lowering the heels of shoes. Foot gymnastics are also of value in the chronic stage, especially extreme flexion of the toes. This movement relaxes the toe flexors, which in this disease are stretched permanently, and stretches the toe-extensors, which are contracted. It also elevates the fallen anterior arches to their natural position, and has a tendency to increase the elasticity of these often rigid and ankylosed joints, besides strengthening the weakened muscles.

The first step naturally in the treatment of these cases is a change in shoes. Shoes are prescribed which have wider toes, broader bases, lower heels, etc.; but the patient often feels more uncomfortable in these more sensible shoes than in the conventional type. I used to explain this anomaly as due to the force of habit, as something akin to the discomfort that the old-time galley-slave felt when he missed the sense of tightness and weight when his chains were removed. The discomfort caused by the change in shoes, however, does not easily wear off, as is usually the case with discomfort caused by a mere change of habit, and there are physical reasons underlying it. The explanation of this discomfort is as follows: The longitudinal arch descends when the weight is on the foot, and immediately springs back when the foot is lifted from the ground. The prominent arches of the conventional shoes permanently support and practically immobilize the arches of the foot and prevent their upward and downward excursions. In the orthopedic type of shoe, on the contrary, the arch-supporter is not prominent, with the result that the arches of the foot, if the patient changes to that type of shoe, suddenly lack their accustomed support. The arches, weakened from their long disuse, lack the power to spring back by themselves, and having plenty of room, they fall; hence the stretching, discomfort and pain.

Also the low heel in this shoe throws a greater weight on the heel of the foot, which, weakened in high-heeled toe-walkers on account of partial disuse, cannot stand the additional burden without pain. Further, there is discomfort due to the hallux valgus, bunions, corns, etc., which are never-absent companions of the "new heel," for they rub against the inner wall of the more spacious toe in this sensible shoe, while they fit like a glove in the conventional shoe which was their original mold.

All this has a practical bearing on the treatment. The best way of strengthening arches and heels is to compel them to function. But if a radical change of shoe is made, functioning of the tissues is compelled to begin abruptly, and results in stretching and injury to the tissues. If, however, shoes are changed gradually, functioning begins gradually, which is physiologic in strengthening weakened tissues. The change, therefore, should be made gradual instead of radical.

Experience has taught that the stumbling-block in the treatment of this trouble is the difficulty that accompanied the change of shoes. Either because of the discomfort that orthopedic shoes give at the beginning or because they are "ugly," a great many patients refuse to submit to them, choosing rather to endure life-long suffering.

The Wolff law which says that acquired bone facets disappear and the original facets come back, without

Fig. 3.—Arthritis deformans. The patient has for years suffered from broken-down anterior arches. As far as it can be ascertained he is free of this lesion in any other part of his skeleton.

which process the successful treatment of those cases in which bone changes have taken place is an impossibility, formulates a phenomenon which can be attained only slowly. Notwithstanding the plasticity of the human foot it has taken the greater part of a patient's lifetime for shoes to convert the fronts of the feet into heels—and only step by step, with perseverance and intelligent cooperation, is it possible to reconvert troublesome heels into functioning front feet.

24 West Forty-Fifth Street.

**Graded Milk in New York.**—According to the January *Bulletin* of the New York City Board of Health, the fundamental object of the grading system applied to milk in New York City is to extend the scope of pasteurization, which is said to be absolutely necessary in a great city drawing its milk-supply from many distant points. The graded system has resulted in the extension of pasteurization so that about 100 pasteurization plants are now in actual operation, including those in the city and country, and from one-third to one-half of the milk supply is pasteurized.

## A NEW OPERATION FOR HEMORRHOIDS

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This operation resembles the Whitehead inasmuch as in each operation a pile-bearing ring of mucous membrane is removed, but the method employed is so radically different from the Whitehead or any of its modifications that I have preferred not to call it by that name.

Eight pairs of curved hemostats and the same number of straight hemostats are required. The rectum is well dilated. Eight deep mattress sutures are placed well beyond the hemorrhoidal mass into sound mucous membrane at points corresponding to 12, 3, 6 and 9 o'clock and half-way between each of these—eight in all. Chromic gut is used. Straight hemostats are attached to ends of sutures left long.

Well out on the mucocutaneous junction place corresponding mattress sutures—eight in all—and attach curved hemostats to ends of sutures left long. Hemorrhoids are now between rows of sutures. Cut mucous membrane circularly around the internal row of sutures, avoiding the cutting of sutures. Next cut the mucous membrane circularly near skin sutures taking the same precaution. The entire pile-bearing area is now outlined and limited by two circular incisions. With blunt curved scissors dissect and cut free this napkin-ring of hemorrhoidal mucous membrane. A stream of hot saline solution facilitates all this cutting and reduces hemorrhage. Tie 12 o'clock suture in mucous membrane, held by straight hemostat to 12 o'clock suture in skin, held by curved hemostat; 6 o'clock mucous membrane to 6 o'clock skin, etc. Dress with tube.

The advantages of this operation are: (1) very little hemorrhage; (2) accurate and secure line of sutures; (3) scar well out near skin (a little contraction is beneficial if anything); and (4) in my experience no complaints of severe pain.

This procedure has been carried out in a number of cases.

## HEMORRHAGIC DISEASE OF THE NEW-BORN INFANT TREATED BY HORSE-SERUM

WALTER B. JENNINGS, PH.B., M.D., NEW YORK

I wish to add a case to those of hemorrhagic disease of the new-born infant in the treatment of which blood-serum was used, as reported by Reichard, Perkins, Barringer and Claybrook.[1]

### CASE REPORT

*History.*—Feb. 4, 1913, a female infant 4 days old came under my care. The child was well formed, weighed 8 pounds and was the sixth child. The mother died, three hours post partum, following normal labor. She was attended by another physician, who reported that she had suffered from pernicious anemia and valvular disease of the heart. The child was apparently well until the fourth day when, at 4 p. m., it vomited blood, which was bright red in color. The napkin used was markedly colored and the amount of blood lost appeared to be about 6 or 8 drams.

Feb. 5, 1913, at 5 a. m. the baby spat a teaspoonful of bright-red blood; at 8 a. m. bright-red blood was passed from the rectum, the amount of which was said to be about 1 ounce.

*Treatment and Course.*—At 8:30 a. m. an injection of 7 c.c. of normal horse-serum was given subcutaneously. At this time the rectal temperature was 100.2 F., pulse regular but so rapid that it could not be counted. After a quiet day, during which the baby had vomited its food but no more blood, at 5 p. m. another injection of 8 c.c. normal horse-serum was given. The rectal temperature at this time was 97.4 F. The child was given nourishment in the form of modified milk.

Feb. 6, 1913: The baby had a good night, sleeping well and taking its food without disturbance. The bowel movement was like tar, and the urine was stained with blood. The rectal temperature was 96.6 F. An urticarial rash appeared on the face, feet, legs and arms. At 8 p. m. the rectal temperature was 97 F. There had been no vomiting of blood.

Feb. 7, 1913: The baby had a good night and took its food well; the urine was not blood-stained; the bowels had not moved; the rash was fading; the cord was almost separated but no bleeding had occurred.

Feb. 8, 1913: The cord was completely separated, the surface being clean and normal, without hemorrhage. No bleeding had occurred for three days. The rectal temperature was 97.2 F. Feb. 19, 1913, the child was perfectly well.

On March 23, 1913, the frenum of tongue was cut to relieve the tongue-tie and no more than normal bleeding occurred.

The subnormal temperature together with the urticarial rash is worthy of mention in this case. The normal horse-serum was furnished by the Research Laboratory of the New York Board of Health.

140 Wadsworth Avenue.

1. The following articles appeared in THE JOURNAL, Oct. 26, 1912: Reichard, V. M.: Spontaneous Hemorrhage of the New-Born with Recovery, p. 1539; Perkins, M. J.: Diphtheritic Serum Used to Control Bleeding in a Hemophiliac, p. 1539; Claybrook, E. B.: A Case of Hemophilia, p. 1540; Barringer, D. S.: Unilateral Kidney Hemorrhage Controlled by Injections of Human Blood-Serum, p. 1538.

# Therapeutics

## MUSHROOM POISONING

Poisoning by this fungus is not at all infrequent, and consequently the treatment of this condition is worthy of careful consideration. In this country edible mushrooms found growing wild are gathered much more frequently than they used to be, both because of the example set by our foreign-born residents, and because of the greater demand for them as a delicacy in hotels and restaurants. Mushrooms are also cultivated, and a certain variety brings a good price. It is perhaps rare for the poisonous varieties of mushroom to be dispensed by a hotel or restaurant, the greatest care being exercised in deciding that the product offered is edible, that is, non-poisonous; but children sometimes obtain and eat the poisonous mushroom, and private families occasionally cook and serve it.

The mushroom is rich in nitrogen, but it is uncertain how much of this nitrogen can be utilized as a food; it is said to be absorbed only in small part, and is likely, during its digestion, to cause some gastro-intestinal irritation in many persons. As a nutrient the mushroom is of little value, since a large proportion of it is water.

Over two thousand varieties of mushrooms have been described, some of which are harmless, and others exceedingly poisonous. Gibson[1] considers that the usual methods of distinguishing between edible and poisonous varieties are unreliable, and suggests the following considerations in the determination as to their value: "1. Avoid every mushroom having a cup, or suggestion of such, at its base; the distinctly fatal poisons are thus excluded. 2. Exclude those having an unpleasant odor, a peppery, bitter or other unpalatable flavor, or tough consistency." The *Amanita muscaria* and the *Amanita phalloides* are regarded as among the most poisonous, and contain the active principle muscarin or amanitin. The *Amanita muscaria* is "distinguished by its bright-orange or red pileus [cap] covered with soft, fugacious, whitish warts, its white, rarely yellowish lamellae [gills], and its white floccose stipes [stem], bulbous at the base and bearing, at its upper attenuated extremity, a white ring."[2] The common edible mushroom is the *Agaricus*

1. Gibson, W. Hamilton: Our Edible Toadstools and Mushrooms, Harper & Brothers, 1903, p. 33.
2. Foster, Frank P.: Medical Dictionary, under Agaricus, i, 108.

*campestris*, belonging to the subvariety of *Psalliota*, "distinguished by the silky floccose or finely scaly pileus, the somewhat reddish tint of the flesh, and the pinkish lamellae changing to a dark brown. There are many varieties, some of which are cultivated on a large scale, especially in France." [2]

All fungi after being picked are prone to rapid decomposition. Some of the poisonous constituents in edible mushrooms due to decomposition, and some of the poisonous constituents of non-edible fungi may be destroyed or dispersed by heat, especially if thoroughly cooked. Many of the products of decomposition, however, and the poisons in poisonous mushrooms are irritant to the gastro-intestinal tract and poisonous to the nervous system. Some persons are more or less seriously poisoned even by edible mushrooms that are not fresh, and there are persons who have an idiosyncrasy for all mushrooms or for certain varieties.

The alkaloidal poison of the *Amanita muscaria*, termed muscarin, closely simulates in its molecular constitution cholin, which is a constituent of some animal tissues, and under certain conditions is set loose in the intestine and acts as a nervous irritant. This alkaloid muscarin, which is the constituent of non-edible mushrooms that causes poisoning, resembles in its physiologic action pilocarpin, although it is a very much more active poison.

After one or more poisonous mushrooms have been eaten, rarely will there be nausea and vomiting within a short time. Generally the absorption of the toxin does not take place until after the mushrooms have entered the intestine. Symptoms of poisoning do not occur for several hours after the mushrooms have been eaten; then pain, cramps, reflex vomiting and watery purging are likely to occur. If much of the poison has been absorbed before this local irritation takes place, symptoms of central poisoning occur, as noted by quickened pulse, rapid respiration, dizziness, muscular tremblings, and perhaps signs of intoxication bordering on confusion and delirium. The pupils are contracted. If the poisoning is more serious, the respiration and heart fail and the patient may die in collapse, consciousness generally not being lost. As in pilocarpin poisoning, there is a more or less profuse perspiration, and a free flow of saliva and bronchial mucus. This profuse perspiration and the watery stools cause great thirst and prostration.

If for any reason an insufficient amount of the poisonous mushroom has been ingested to cause gastro-intestinal irritation, before purging begins a sufficient amount of the toxin may have been absorbed to cause the nervous symptoms to be the most important and prominent. This kind of poisoning does not occur until eight or ten hours after the ingestion of the mushrooms. In this form of poisoning the most troublesome symptoms are vertigo, disturbed vision, irregular and weak pulse, and muscle twitchings or actual rigidity. The extremities become cold and the face becomes pale or bluish; there may be collapse, and later semiparalysis. In these instances of late poisoning there may be drowsiness and stupor as well as intense dyspnea. A greatly impaired circulation may be the cause of this cerebral condition, as coma is probably not a part of true muscarin poisoning. When the symptoms of poisoning appear late, as just described, showing that a large amount of the toxin has been absorbed before vomiting or purging has protected the system, the prognosis is much more serious.

The treatment of mushroom poisoning depends somewhat on the time when the symptoms occur. If they occur soon after the ingestion of the mushroom, a brisk emetic is the first treatment; the choice of an emetic, whether zinc sulphate, ipecac or mustard water, is a matter of unimportance, provided that the stomach is emptied. As soon as the stomach is emptied by the emetic, or by vomiting without the aid of an emetic, large draughts of hot water or flaxseed tea, slippery-elm tea or starch water should be given to wash off and sooth the mucous membrane. As soon as the stomach is quiet and the vomiting has ceased, a cathartic should be given; none is better than castor oil, as it is stated that an oil does not dissolve the toxic principle or promote its absorption. An ordinary dose of castor oil would be 30 c.c. (an ounce), given in the manner the least disagreeable to the patient. If the oil is not retained long enough to have passed into the intestine, a saline, as magnesium sulphate or sodium sulphate, may be given.

Alcohol in any form should probably not be given, as it may promote the absorption of the toxin. Strong coffee, however, is indicated. Hot, dry applications to the body, friction of the extremities and a hot-water bag at the feet tend to prevent shock and depression from this nerve poison.

The physiologic antidote to muscarin is atropin, which should be administered immediately, hypodermatically; 1/100 grain should be given, perhaps combined with 1/30 grain of strychnin, both of which drugs act also as circulatory stimulants. If the collapse is prolonged, the strychnin may be repeated within three or four hours. The atropin may be repeated in five or six hours, and to offset a prolonged collapse, some form of digitalis may be given, either by the mouth or hypodermatically. It should be remembered that digitalis acts slowly, and will be of little value for from six to ten hours. The value of camphor, given subcutaneously, as a cerebral and circulatory stimulant should be remembered. The contents of an ampule containing a saturated solution of camphor in sterile oil should be administered subcutaneously every hour for several doses, if needed. The coffee, or caffein, should also be repeated.

Death may occur after two or three days from mushroom poisoning; therefore, even with apparent improvement, the patient should be kept at rest and all care be taken that sudden collapse does not occur.

If the vomiting persists, or the diarrhea becomes too profuse and continuous, the sedative and soothing action of bismuth subcarbonate should be utilized, and soothing, mucilaginous warm drinks should be given. A bland, warm cereal should be the first food given. As previously stated, the patient is likely to be thirsty and crave cold liquids, but it is better that he receive warm liquids.

If the vomiting becomes serious, or the purging is not tractable, and especially if there is severe pain, a hypodermatic injection of a small dose of morphin should be given. The liquids taken, either on account of thirst or for sedative purposes or as foods, soon promote elimination by the kidneys, especially if the blood-pressure has been improved and collapse is not in evidence.

The prognosis is usually good in mushroom poisoning, though the patients are very ill for a few hours or days.

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## SCIENCE AND THE AGRICULTURAL EXPERIMENT STATIONS

It is only about twenty-five years since Congress passed the Hatch act founding the system of agricultural experiment stations in this country. This act, supplemented by subsequent legislation, has brought the annual federal grant to each state up to $30,000, a nucleus to which the states themselves have in many cases added contributions in a liberal way. Those less familiar with the work which is actually accomplished by means of these great research foundations often think of it solely as an attempt to further the interests of the practical farmer. Indeed, the institutions were founded "to promote scientific investigation and experiment respecting the principles and applications of agricultural science"; but the trusts have been broadly administered, and the scope of the work extends far beyond the boundaries of the farm into the most diverse phases of human activity and concern. In more than one way have the researches bordered on the field of human health and given answers, suggestion or impetus to medical problems.

The lessons of this imposing movement in agricultural research and education are manifold. The American experiment stations have demonstrated the solidarity of the different sciences. Their successes have taught the important lesson that no one can foretell what beneficial results may develop from highly specialized researches, and they have fostered a spirit of popular interest in the progress of science quite beyond anything that could have been expected two decades ago, when empiricism still reigned supreme and distrust of the utility of scientific investigation was wide-spread. The organization of the stations is teaching a further lesson which sometimes needs to be brought home in the domain of medical research: it is the necessity of translating into practice the work of the laboratory, of trying out the principles and hypotheses of the investigator in the crucible of experience.

We are led by the perusal of a recent report of the work of the Wisconsin institution[1] to refer to the intimate relations, both direct and indirect, which our experiment stations bear to the conservation of health and the problems of human nutrition. Out of the forty or more problems recently made the subject for study, several have a distinct interest to the medical profession either because of their direct bearing or because they suggest the way to meet some of our difficulties. Foremost, perhaps, are the interesting investigations to which we have already referred[2] on the effects of rations restricted to single plant sources. Animals were fed balanced rations from the corn, the oat and the wheat plant. As they reached physiologic maturity it became evident that the ration from the wheat was strikingly deficient, the wheat-fed mothers producing either dead or weak, undersized offspring. In following up the cause of the disastrous effects of the wheat ration it was found that the deficiency of the wheat plant is not due to toxicity of any part of the plant, but rather to the acid conditions imposed on the animal, caused by an insufficient supply of lime and other alkaline substances in the roughage. The deficiency was overcome by the addition of alfalfa hay, which is especially rich in these base-yielding constituents. The bearing of this on the dangers which may lurk in so-called one-sided dietaries in man when the range of the food materials is limited in variety, at once becomes apparent.

Other Wisconsin researches relate to the mineral requirements of farm animals, particularly the need of calcium and phosphorus. The assertion has often been made that feeding to pregnant animals a ration high in mineral matter, especially lime, will cause undue development of the skeleton of the fetus, with subsequent difficulty at birth. The problem was thoroughly studied by feeding brood sows rations rich in calcium. The results show that no such thing occurs, but that the size and lime-content of the fetus skeleton is kept very constant when widely different amounts of lime are consumed in the food. Incidentally it was observed that a large consumption of food, such as is customary in an animal on which the demands of lactation, etc., are considerable, leads to the loss of a large amount of lime from the body in the feces, with the correspondingly large fecal residue. The desirability of liberal supplies of lime in the ration under such conditions is thereby emphasized. Other studies by Professor McCollum, who has been responsible for many of these valuable contributions, indicate clearly that not only must sufficient amounts of the necessary mineral elements be supplied, but also there must be a proper balance between them, a fact hitherto not sufficiently recognized. And when to these inquiries into the laws of nutrition are added the Wisconsin trials regarding the rôle of the plane of protein feeding on the efficiency of rations for growth, it will be seen how closely these studies approach the fields of interest to the student of human nutrition. Indeed, we are always dependent on animal experimen-

1. Report of the Director, 1911-1912, University of Wisconsin Agr. Expt. Sta., Bull. 228, January, 1913.

2. Unappreciated Factors in Diet, editorial, THE JOURNAL A. M. A., March 2, 1912, p. 637.

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tation for the preliminary investigation of certain far-reaching human problems. The inclusion of the farm animals in the plan of experimentation thus doubly serves a beneficent end.

Reference may also appropriately be included here to numerous other lines of research in progress at Madison. The problems of the bacterial and chemical factors in the ripening of cheese are of great economic and dietary importance; and the work represents a step in the direction of discovering the secrets of the empiric methods which have been sanctioned by the experience of generations. Precisely as the improvement in the quality of market milk has been accompanied by a greater uniformity of the product and a dependability on some of its important properties, so it is now hoped to establish uniform methods of cheese manufacture in which pasteurized milk and pure culture starters have their place.

Animal diseases, never without concern to mankind, are also being investigated. Avian tuberculosis has been found quite widely spread throughout Wisconsin. Unlike the mammalian form of the disease, it is primarily an affection of the liver and spleen. The experiments indicate that the disease is contracted mainly through feeding, that it can be transmitted from fowls to such mammals as swine, and that the close contact of healthy and diseased birds will transmit the infection. The main danger, therefore, as with the disease in cattle, is in introducing diseased stock into the flock. Unfortunately, the owner cannot safeguard the condition of his flock by applying the tuberculin test to his purchases, as he can with cattle.

The state of Wisconsin is to be congratulated on having enlisted into its service a group of efficient investigators who are fulfilling in their local sphere the expectations of the great national research foundation. In other states this story can be found repeated. By their quiet, modest labors and persistent patience in the field and the laboratory these untiring workers are doing quite as much for the highest welfare of their state as are those who shine conspicuously in the halls of legislation.

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## RURAL ORIGIN OF CITY TYPHOID

We are coming to the season of the year usually marked in our cities by the annual spring rise in the curve of typhoid frequency, attributed to infectious materials carried by freshets into water-supplies. The whole question of the origin of typhoid fever becomes of special interest at this time, and as there has recently been a protest against what is called the rural origin of typhoid, the subject deserves particular consideration. Dr. Bolduan, assistant to the general medical officer of the Department of Health of the city of New York, who has for ten years been in charge of the investigation of the origin of all cases of typhoid fever occurring in New York City, read a paper before the American Public Health Association last fall on the rural origin of much of the typhoid fever in large cities and the need of reorganizing rural public health administration. It has just been republished as a separate pamphlet by the New York Health Department. Bolduan's conclusions merit serious attention.

While typhoid is usually considered to be mainly, if not almost entirely, a water-borne disease, and while there is no doubt that drinking-water has been responsible for the great majority of cases in large cities, the water seems to be slightly, if at all, responsible for typhoid in New York. The proportion of cases to the population of the five boroughs of Manhattan, the Bronx, Brooklyn, Queens and Richmond, is about the same, though each of the boroughs has a special water-supply with different conditions. The typhoid rate is about the same in districts supplied with artesian well-water as it is in those which have a surface water-supply. Evidently, other factors common to all the boroughs are the source of the typhoid infections, and the water-supply has probably but little to do in producing them.

The more carefully the sources of New York's typhoid infections have been studied, the more frequently has milk been discovered to be the chief vehicle of infection. In spite of great reforms in this matter in the last few years, this still remains true. Efforts at control have resulted in decided improvement, but the education of the dairyman is a slow process, and dairy farming is still largely in the hands of the ignorant. After milk the most common source of typhoid fever in New York is infection of the patient while out of town. According to the records, about one-quarter of all New York's typhoid infections are of this origin. Dr. Bolduan does not hesitate to say that while it is impossible to give any exact figures, he feels that, including milk, water, out-of-town residence, etc., over half of the typhoid infections are of rural origin. He adds, "Excepting those communities where the drinking-water is derived from an infected lake or river near the city, or whose sewage disposal is unsatisfactory so that fly-infection is prevalent, this probably applies to most other American cities." It has recently been denied that typhoid is a rural rather than an urban disease; and while the relation of deaths from typhoid fever to regional population, as shown in crude statistics, would seem to prove this, the falsity of the contention has been shown by tracing city typhoid fever cases to their sources, as Dr. Bolduan has done.

It is evident that any attempt on the part of New York further to reduce the incidence and the mortality of typhoid must take into consideration as a prime factor the question of securing the lessening of typhoid in the country places from which water, milk and food are drawn. During the past three years there have been an average of about 3,500 cases of the disease in the city, and about 550 deaths. This is too large a death-rate to be neglected further, and every effort must be made to lessen it. A commission appointed by the governor of

New York reported that the health of the larger cities as well as of the country places of the state would be greatly benefited by the introduction of a system of state control of health outside the cities. As it is, local health authorities in small towns and country places are usually inexpert and are paid so poorly that they have to devote themselves to other occupations for a living, and health matters are neglected. State control would bring experts into the service, and what has been accomplished in the Canal Zone by direct government control of sanitation, and in the quarantine of this country by the United States Public Health Service, shows how much the presence of experts with ample sanitary authority can accomplish for health.

The problem in New York is the same as that in other states, and the experience there may well be taken as a ground for similar developments in legislation throughout the country. As our knowledge of sanitation grows, we realize more and more that the health of the individual depends largely on the community in which he lives, and that the health of a community depends to a great extent on the health of other communities having commercial and other relations with it. We have applied this principle in quarantine regulations against foreign countries and cities liable to import infectious disease, but it would be impossible to quarantine properly against unhealthy communities of small size in the same state. It is, therefore, all-important to secure by general legislation such control over the health of smaller places as will assure large cities from being contaminated by them in the course of commercial relations. Properly directed, this will not inflict a burden on the smaller communities, but on the contrary by improving their health will prove of the greatest possible benefit to them. State control of details in health matters and national control of important health movements would soon do for the country as a whole what Colonel Gorgas, with sufficient authority, has been able to accomplish for the Canal Zone.

## ACETIC ACID AND ACIDOSIS

Before the intricacies of certain pathologic manifestations, such as are exemplified in acidosis and ketonuria, can be adequately explained, it will be necessary to broaden our knowledge of what is now commonly spoken of as intermediary metabolism. We shall need to know the story of each digestion fragment as it travels through the organism after leaving the alimentary tract. When the forerunners of the various abnormal products that now and then put in an appearance in the excretions of the body are accurately known, progress will be more rapid and satisfactory. The stages in the normal disintegration of the fats, carbohydrates and proteins must be learned so that faulty processes can be recognized by their products and referred to their real defects.

A new method of study has been drawn into service in recent years to render assistance in this difficult task. By perfusion of individual organs, such as the heart, lung, kidney or liver, it has been possible to restrict the enormous number of variables that enter into the problem of metabolism in any study of the organism as a whole. The blood driven through an isolated liver, for example, may be analyzed before and after the process. Various chemical compounds can be added to the perfusion fluid, and the fate of these on the one hand, as well as their effect on the tissues on the other, can be ascertained in an experimental way. The catalogue of results already ascertained in this way is no longer a small one.[1] The liver has been a favorite organ for study for reasons that are in part obvious. Its large size, its presumable superlative importance and its accessibility have encouraged the frequent use of this organ.

Recent observations carried out by this method of artificial perfusion in Embden's laboratory in the municipal hospital at Frankfort-on-the-Main throw some light on the possible rôle of acetic acid in some of the intermediary processes. That it may represent a stage in the transformation of fats has been rendered probable by earlier researches, and it is not at all unlikely that the amino-acids derived from proteins may lead in the same direction. For it is now settled beyond a probability that aceto-acetic acid can arise from both fats and proteins; and acetic acid appears to be an intermediary transformation product common to all the foodstuffs.

A. Loeb[2] has lately shown that the addition of acetic acid to fluids perfused through surviving liver greatly increases the production of aceto-acetic acid that can be initiated in this manner. This fact may be of more than incidental practical significance. It appears from available records that acetic acid is sometimes found in magnified quantities in the urine of diabetics. Rumpf[3] has reported the presence of as much as 5 gm. per day in one case. These combined facts, namely, the alleged elimination of acetic acid in cases of diabetes and the demonstrated augmentation of the formation of diacetic acid (aceto-acetic acid) in surviving livers in the presence of acetic acid indicate that the latter may have an unfavorable influence on the disease in promoting acidosis or ketonuria.

Loeb suggests that any procedure which will avert the formation or retention of acetic acid may have a beneficial effect in the direction of therapy. The precise method of accomplishing this is not yet apparent. In any event, it seems rational to warn diabetics in whom acidosis is evident against the undue ingestion of acetic acid.

1. Compare Dakin, H. D.: Oxidations and Reductions in the Animal Body, Longmans, Green & Co., New York, 1912.
2. Loeb, A.: Ueber das Verhalten der Essigsäure bei künstlicher Durchblutung der Leber, Biochem. Ztschr., 1912, xlvii, 118.
3. Rumpf: Berl. klin. Wchnschr., 1895, Nos. 31-32.

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## THE URINARY EXCRETION OF FAT

Protein, carbohydrate and fat are all recognized as constituents of the urine under pathologic conditions, and their occurrence in this excretion has a distinct diagnostic significance. It is chiefly when the question of the appearance of these "proximate principles" in the urine in conditions of health is under discussion that any serious difference of opinion arises. Whether a "normal" urine may contain minute traces of protein or of sugar has been debated at various times. The quantities present, if there be any, are so small that extreme refinement of technic and accuracy of judgment are called for in detecting them with certainty. Nevertheless, in view of the decided importance which is attached to the finding of small amounts of protein or of sugar in a clinical way, it becomes the more important to know the quantitative features of the subject — to determine the limit between the elimination which may be termed normal and that which approaches the pathologic. Not infrequently, for this reason, one hears reactions for protein or sugar characterized as unsuitable clinical tests because they are "too delicate"; that is, they reveal amounts of these compounds which are in no sense pathognomonic.

To point out where lies the border-line between the supposed physiologic and the objectionable pathologic content of these two substances in the urine is not the object of this discussion. We call attention rather to the less familiar facts in regard to the occurrence of fats in the urine. In chyluria, as is well known, the content of fat thus excreted may be not inconsiderable. How about the urine in other abnormal conditions or even the urine of healthy man? Here again difficulties of an analytic nature confront the investigator. It will not answer to examine the urine by the conventional method of extraction with fat-solvents like ether; for other urinary constituents such as hippuric acid may interfere, owing to their solubility in these organic solvents. Special methods of examination are called for.

The occurrence of very small amounts of fat in normal human urine has been described by competent observers.[1] The very fact that the quantities thus reported are exceedingly small calls for careful critique and the exclusion of possible sources of error. The topic has been reinvestigated in Professor Kumagawa's laboratory in Tokyo.[2] The results obtained with healthy Japanese indicate not only individual variations in the subjects, but also inequalities from day to day. In any event the amount of fat excreted in the urine per day under ordinary conditions does not exceed 0.02 gm., or ⅓ grain. When the ingestion of fat was decidedly increased, so that the individual ate from 225 to 250 gm. (from 7 to 8 ounces) per day — a quantity not regarded as excessive in some dietaries — the maximum urinary output was 0.034 gm. (½ grain). The increase was unquestionable, yet in relation to the total intake it shrinks into insignificance.

An investigation of the urinary fat in diverse pathologic conditions has not disclosed anything of unusual interest or import. Formerly it was supposed that the fat found in cases of kidney disease was derived from epithelial cells that had undergone "fatty degeneration." This factor may presumably be excluded. The data actually obtained from nephritic patients are variable, and it is probable that the few added milligrams of fatty material found in the urine are determined by an altered permeability of the renal blood-vessels.

In other diseases — diabetes, phthisis, icterus and hepatic cirrhosis — for which a renal elimination of small amounts of fat has been conjectured or reported for various reasons, nothing unusual was found by Sakaguchi. This statement likewise applies to persons with fractures of the bone or in cases of resected bones, despite the published statements regarding the occurrence of fat emboli and the excretion of fat droplets in the urine in such conditions. In view of all these newer facts one is impressed with the adequacy of the kidneys in preventing any noteworthy losses of the valuable fat from the blood-stream, precisely as they are normally impermeable to the circulating sugar and proteins.

1. Mörner, K. A. H.: Skandin. Arch. f. Physiol., vi, 332. Hybinette, S.: Ibid., vii, 380. Kakiuchi, S.: Biochem. Ztschr., xxxii, 137.
2. Sakaguchi, K.: Ueber den Fettgehalt des normalen und pathologischen Harns, Biochem. Ztschr., 1913, xlviii, 1.

## PAVY AND DIABETES

The name of Frederick William Pavy, who died in September, 1911, is almost exclusively associated with his work on diabetes and carbohydrate metabolism. He was the first to describe cyclic or orthostatic albuminuria (1885), and is remembered by his substitution of ammonia for caustic alkali in Fehling's solution (Pavy's blue fluid), and by the rare arthritis in typhoid fever known as "Pavy's joint"; but from the date of his first paper on "Saccharine Matter" (1853) his whole life was practically devoted to an endeavor to confute Claude Bernard's hypothesis that the liver is the great storehouse of utilizable sugar in the form of glycogen.

Considerable light has recently been thrown on Pavy's attitude to this problem in the sympathetic studies recently published by his colleagues at Guy's Hospital, Drs. F. Gowland Hopkins[1] and Frederick Taylor.[2] While in Paris, in the early fifties, Pavy had met Claude Bernard and assisted him in his laboratory at the Collège de France. It will be remembered that Bernard's initial experiment consisted in examining the blood in the hepatic veins of a killed animal which had been extensively fed on carbohydrates. The blood was found to be loaded with sugar, not only in this case but also later in animals fed on meat alone.

On returning from Paris, Pavy tested these experiments by killing his animal with one brisk blow on the

1. Hopkins, F. Gowland: Science Progress, London, 1912, pp. 13-47.
2. Taylor, Frederick: Guy's Hosp. Rep., 1912, 3 s., ii, 1.

head and immediately examining the blood, in which he found no sugar. From this he argued that the sugar found by Bernard was due to a post-mortem reaction in the liver, and he maintained that the amount of sugar in the portal blood is not greater than in the rest of the organism, that sugar is decomposed and converted into fats and proteins in the intestines, passing in these forms through the lymphatics and portal vessels, and not passing into the liver and becoming hepatic glycogen unless it is in excess. He showed that no change of glycogen into sugar takes place in the liver during life, that oxygen does not destroy sugar in the blood, and that glycogen itself exists in the blood.

This of course represents the net result of Pavy's final view on diabetes, for at the start he was diametrically opposed to the Bernard hypothesis at every point. Hopkins shows that, in his life-long dispute over the glycogenic theory, Pavy was gradually forced, not so much by the results of others, which he seldom read, as by his own experiments, to give up his original position bit by bit, until he had unconsciously made his own views conform to the final doctrine entertained by Bernard, that the liver is the main warehouse of glycogen. Indeed, Hopkins shows that in the last experiment which Pavy performed, with Godden[3] (1911), it was found that no less than 2 gm. of dextrose per kilogram of body-weight could be injected into the venous circulation in the course of fifty-five minutes without any noticeable trace of glycosuria, which would indicate that at least seven times the normal consumption of carbohydrates (*a fortiori* of hepatic sugar) might enter the circulation without appearing in the urine. "How far Pavy would have adjusted his teaching to meet this result," says Hopkins,[4] "we cannot tell; as all his writings show how great was the importance he attached to the argument which his very last experiments were to undermine, the circumstances are not without a degree of pathos." Yet all recent experiments on phlorizin diabetes, pancreatic diabetes and diabetes associated with insufficiency of the posterior lobe of the pituitary body go to show the correctness of Pavy's contention that the liver is not the only source of sugar.

What is most remarkable is the extraordinary pluck of the man in sticking to his guns in the face of almost evident defeat. He had perhaps the largest practice in London in diabetic cases, in the treatment of which he was particularly successful; yet, says Taylor,[5] "almost every afternoon about four or half past four o'clock" Pavy's well-known carriage "of snuff brown, picked out with red" and his fine pair of horses, which he always bought himself at Tattersall's, might be seen outside of the laboratories on the Victoria Embankment where metabolism experiments were conducted under his direction. "It may chill the heart of those who, at the beginning of their career, think of working at such problems," says Hopkins,[6] "to view what seems the small harvest of Pavy's fifty years of labor, but Pavy had no sense of failure." Though his scientific life may have been, in the poet's words, a "long war closing in defeat," yet it was, in the best sense, "defeat serenely borne."

Personally, Pavy was a strongly individualized character. According to Taylor, he liked to have the best kind of things, particularly in diet, in which he was naturally methodical, but he declined to be a follower of fashion. Although he lived to be 82, he still wore the wide-lapelled frock coat, the open double-breasted waistcoat and a cravat tied in the large bow which had been the vogue fifty years before. That he was nervous during his lectures, as Taylor states, is denied by Lucas,[7] who informs us that, on the contrary, he rather enjoyed the boisterous applause given by the students to such quaint mannerisms as referring to an animal's mouth as its "oral orifice," or stating that "our assistant will now proceed to agitate the liquid."

"What sin," said the satirical Sir William Gull, "has Pavy committed, or his fathers before him, that he should be condemned to spend his whole life seeking for the cure of an incurable disease?" This epigram loses much of its point when we reflect that Pavy based his views largely on the success of his treatment of diabetes at the bedside. His "Treatise on Food and Dietetics" (1874), which reached a second edition in the following year, is a well-known landmark of his reputation in this field; and his measurements of the food metabolism and urinary excretion in the case of the American athlete, E. F. Weston, who covered 500 and 1,000 miles in as many consecutive hours (1876), are still remembered. The true status of carbohydrate metabolism is still very much in the air, and we may agree with Dr. F. Gowland Hopkins that these problems "call continually for courage and patience—the courage and patience which characterized the subject of this memoir, F. W. Pavy."

3. Pavy, F. W., and Godden, W.: Jour. Physiol., 1911, xliii, 199.
4. Hopkins, F. Gowland: Science Progress, 1912, p. 20.
5. Taylor, Frederick: Guy's Hosp. Rep., 1912, 3 s., ii, 16.
6. Hopkins, F. Gowland: Science Progress, 1912, p. 46.
7. Lucas, R. Clement: Guy's Hosp. Gaz., 1913, xxvii, 55.

## Current Comment

### MAN AND MONKEY

The question of the simian ancestry of man has long been the subject of jest. From the zoologic point of view it has been a matter of more serious concern as far as the position of man in any scheme of classification is involved. With the advent of certain of the modern methods of study applied to blood and the problems of immunity, data of a new sort have been furnished to bear on the real relationship of man to some of his animal competitors. The precipitin reaction has made it possible to bring to light features of this sort and to substantiate family resemblances in various species. Transfusion experiments and the untoward results which attend them when they are conducted between unrelated animals are contributions in the same direction. By the methods here indicated it has already

been shown that precipitins which are specifically developed for human serum are also applicable to the group of anthropoid apes which includes the chimpanzee, orang-outang and gorilla. They fail to react with the blood of the familiar cynomorphic monkeys. Similar are the findings in the way of relationship after blood transfusions, the two groups of the monkey tribe exhibiting different behavior in respect to the induction of hemolysis by the presence of human serum. The latter does not lake the corpuscles of the anthropoid apes, which endure the introduction of human blood into their circulation without notable distress. To this evidence of blood relationship have now been added fresh facts derived from the domain of metabolism. It is now familiarly recognized that whereas the end-product of the metabolism of purins in man is uric acid, which is excreted in the urine, in most of the higher animals, such as the dog, cat, rabbit, etc., allantoin represents the final stage in the degradation of the purin nucleus. Wiechowski of Prague has now demonstrated that the chimpanzee, an anthropoid ape, resembles man in respect to the presence of uric acid and the absence of allantoin in the urine.[1] In the common macacus monkey[2] and in the baboon the reverse appears to be the case, the individuals of this class falling in line with other familiar laboratory animals. The long-known contrast between man and the animals in respect to this feature of metabolism is thus made less striking by the discovery of these intermediate species exhibiting human characters in more than one way. The gap has been bridged by the studies on the anthropoid apes which have now furnished to science the reputable evidence for that relationship which the behavior of apes in vaudeville and elsewhere has strongly suggested.

1. Wiechowski, W.: Ein Beitrag zur Kenntnis des Purinstoffwechsels der Affen, Prag. med. Wchnschr., 1912, xxxvii, No. 22.
2. Hunter, A., and Givens, M. H.: The Nitrogen Excretion of the Monkey, with Special Reference to the Metabolism of Purins, Jour. Biol. Chem., 1912, xi, 39.

## WHY SOME PEOPLE DISLIKE THE AMERICAN MEDICAL ASSOCIATION

A member of the advertising department of THE JOURNAL was talking recently with a man we may call Mr. X, who was the representative of an association which obtains and furnishes advertisements for religious papers. Mr. X volunteered the information that he was going to seek some other line of work and, when asked why, replied that the American Medical Association had, by its campaign against fraudulent "patent medicines" and quackery, greatly curtailed the advertising field of the religious press. The sheet-anchor of advertising in religious papers has always been the "patent-medicine" business. "The religious paper," said Mr. X in effect, "gets its subscribers largely through the efforts of the local pastors in smaller towns. Now, since your organization [the American Medical Association] has been showing up the fraudulent 'patent medicines,' the local doctor, who is usually a man of some influence in his community, protests to the pastor against this class of advertising in their church paper. The pastor writes to the publisher saying that it is impossible for him to recommend the paper unless such and such advertisements are dropped. And there you are!" Under the present economic system, it is impossible to fight organized evil without at the same time doing some financial damage to those who have, however indirectly, profited by the existence of that evil. Yet we feel no twinges of conscience in having been instrumental in causing a worthy man to give up what, until comparatively recently, has been a rather profitable occupation.

## "THE MILLS OF THE GODS"

Harry M. Coudrey was found guilty in the federal courts, April 4, of using the mails to defraud in the promotion of what were known as the twin insurance companies—the Continental Assurance Company of America and the International Fire Assurance Company of America. Both concerns went into the hands of a receiver. Many of THE JOURNAL'S readers may wonder what particular interest attaches to these facts; others will remember Harry M. Coudrey as the president of the Labordine Pharmacal Company — in fact Coudrey was, to all intents and purposes, the Labordine Pharmacal Company. Labordine was one of those fraudulent proprietary medicines advertised to physicians as a "vegetable antipyretic" under a formula that was both false and meaningless. It was claimed that "Labordine does not depress the heart," and physicians were urged to use it so as to "avoid acetanilid poisoning" which might follow the use of other remedies. Yet when the Council on Pharmacy and Chemistry had the stuff examined it was found to be essentially an acetanilid preparation, containing nearly 40 per cent. of this drug. Imposing advertisements in medical journals gave the impression that the Labordine Pharmacal Company of St. Louis was a large pharmaceutical concern. As a matter of fact, the "company's" headquarters consisted of one small room on the third floor of an old dilapidated building. The room contained an old roll-top desk, a kitchen table, a bare and dirty floor and one young person in charge who admitted that the stuff was made for Coudrey by the Mallinckrodt Chemical Works. Coudrey, at various stages of his career, has been an insurance agent, a promoter and a member of Congress from Missouri. While holding office at Washington, the papers reported that he had used congressional stationery on which to write letters pushing one of his financial schemes. To the credit of the voters of the twelfth congressional district, it should be said that Coudrey was defeated for reelection in 1910. Previous to his defeat, Coudrey got into the limelight by urging that the government should own and publish the Pharmacopeia. As THE JOURNAL said more than six years ago, in its article[1] on the Labordine Company, one of the humiliating phases of the proprietary medicine business is that, in many instances, these preparations are foisted on our profession by men who know nothing of medicine, pharmacy or chemistry, yet presume not only to concoct our medicines for us, but also to instruct us how to use them. Labordine is dead and its exploiter may have to spend four and one-half years in the federal penitentiary. But we believe it is no exaggeration to say that but for the publicity given to

1. Labordine, Pharmacology Department, THE JOURNAL A. M. A., March 30, 1907, p. 1121.

this fraud by the Council on Pharmacy and Chemistry of the American Medical Association, Labordine would still be found advertised in medical journals and would still be prescribed by many uncritical or unthinking physicians.

### MILITANT SUFFRAGETTES—A SUGGESTION

The difficulties encountered by British authorities in the management of militant suffragettes suggest a solution to the problem by declaring insane the rank offenders in the destruction of property and other outrages. If we define insanity as a condition in which the subject is so mentally out of harmony with the general environment as to be unable to control conduct and to become a public danger, and if we attribute it to some nervous or mental disease affecting the judgment, some of these suffragettes would seem to fall under that head. For a woman of cultivation and social standing the evidence would be much stronger than in the case of an ignorant working man. Confinement in a criminal asylum on such a charge would be far better than in a common jail with ordinary criminals. Asylum authorities are accustomed to treat the severest forms of sitophobia, and could manage a hunger strike far better than jail officers. The condition is apparently getting serious enough to make the suggestion of such a remedy a timely one, and we believe that it could be adopted with the evidence afforded without an undue strain even on the British laws. Woman suffrage may be a worthy cause; if so it will ultimately prevail, but the means now used in Great Britain are not helping it much.

### THE ACTION OF ULTRAVIOLET RAYS ON MILK

We have become familiar in the last few years with the use of ultraviolet rays for the sterilization of water, in which their application has been more or less successful under special conditions. Ayers and Johnson[1] have recently attempted to determine the possibility and practicability of sterilizing milk by ultraviolet rays. Their results are not especially encouraging for this method. Although a marked germicidal action was observed, complete sterilization was not effected. No assurance of the complete destruction of pathogenic organisms could be obtained by this method; moreover, the ultraviolet rays produced an abnormal, disagreeable flavor in the milk treated, which under practical conditions would render the milk unsalable.

### A PHYSICIANS' TELEPHONE EXCHANGE

In some respects Europe is a little ahead of us. We have referred to the agitation on the Continent for an arrangement by which a physician can have a week-end holiday, during which any special calls from his patients will be taken care of by one of his confrères, the arrangement rotating for the benefit of all. The latest suggestion — a physicians' central in the telephone office — comes from Vienna and Berlin, and, we understand, has been tried in this country. The arrangement is similar to the information department of the ordinary exchange. When a physician leaves his office without an attendant remaining to answer calls, he notifies the physicians' central and states where he may be reached at various times. Then any patient failing to receive an answer on calling the doctor's office calls for the physicians' central and ascertains where the doctor can be reached most quickly. In the case of a disaster or accident one can call the doctors' central and ask for the help of the first available two, five or ten physicians, as the case may be. In our cities and in the country, physicians usually have attendants at their offices, or members of their families at home, making such an arrangement unnecessary; but there may be places in which the idea could be put to use with profit.

1. Ayers and Johnson: Jour. Washington Acad. Sc., March 19, 1913.

## Medical News

### GEORGIA

**Personal.**—Dr. J. H. Redding, Waycross, is reported critically ill at his home.——Dr. Willis F. Westmoreland, Atlanta, is recovering from an operation for appendicitis.

**Hospital for Crippled Children.**—Physicians of Atlanta are advocating the establishment of a hospital in that city to be used solely for the treatment of crippled children.

**Painting Presented to College.**—At the last meeting of the faculty of the Medical Department of the University of Georgia, Dr. James L. Hull, on behalf of Mrs. J. B. Morgan, presented the college with an oil painting of the late Dr. James B. Morgan, for more than fifteen years a member of the faculty of the college.

**New Officers.**—Seventh District Medical Society at Marietta: president, Dr. Fred V. Turk, Stilesboro; vice-president, Dr. H. L. Erwin, Dalton. Cartersville was selected as the next place of meeting.——Atlanta Antituberculosis Association: directors, Drs. W. E. Quillian, J. E. Sommerfield, E. G. Ballenger and R. R. Daly; pathologist, Dr. Claude Smith, and orthopedist, Dr. Theodore Toepel.

**Home for Medical Society.**—At a special meeting of the Georgia Medical Society, Savannah, March 28, more than $4,000 was subscribed toward the purchase of the permanent home for the society. About $10,000 is needed for this purpose and the society is said to have an option on a three-story brick house on Drayton Street. A committee in charge of the enterprise consists of Dr. A. J. Waring, Dr. J. Charlton and J. Lawton Hiers.

**State Society Meeting.**—The annual meeting of the Medical Association of Georgia will be held at Savannah, April 16-18. At this session it is said that the project of making all members of the State Association members of the American Medical Association without extra cost will come before the organization for action.——The annual meeting of the Association of State and Municipal Health Officers will be held in Savannah, the day preceding the meeting of the State Association.

### ILLINOIS

**Personal.**—Dr. C. C. Atherton, formerly a member of the staff of the Elgin State Hospital, has reported for duty at the Lincoln State School and Colony.——Dr. and Mrs. J. W. Dreyer, Aurora, sailed for the Mediterranean from Boston, April 5.

**Favor Epileptic Colony.**—A delegation from clubs and civic bodies in Chicago and other cities of Illinois went to Springfield this week to urge the passage of the O'Connor bill, establishing a state colony for epileptics to house about 1,500.

**Hospital Notes.**—An addition has been built to St. Francis Hospital, Macomb, which will double the capacity of the institution so that now one hundred patients can be accommodated. ——Tentative plans for the establishment of the Swedish-American Hospital, Rockford, have been passed on by the board of directors. An additional sum of $20,000 is required before the building desired can be erected.——Dr. and Mrs. C. J. Higinbotham, Streator, have established a private sanatorium at 702 North Shabbona Street.——By a vote of 2,422 to 1,868, the citizens of Belleville have decided to convert the city hospital into a tuberculosis sanatorium which is to be maintained by a mill tax.

### Chicago

**Kosher Hospital Dedication.**—The dedicatory exercises of the new Maimonides Hospital at California and Ogden Avenues commenced April 5, to continue until April 13. The hospital has been erected by orthodox Jews and will be conducted and maintained by the Federated Orthodox Jewish Charities of Chicago. The building, ground and equipment represent an investment of more than $200,000.

**Personal.**—Dr. George Leininger has been appointed superintendent of the Dunning State Hospital.——Dr. and Mrs. William L. Noble and family and Dr. and Mrs. Stephen Wise and family have sailed for Europe.——Dr. John D. McGregor has been appointed city physician, vice Dr. George J. Spencer, resigned.——Dr. J. P. Buck was thrown through a plate-glass window while cranking his automobile, March 31, and suffered severe bruises and cuts which necessitated hospital care.

**Tuberculosis Exhibit Installed.**—A traveling tuberculosis exhibit with models and tables was installed, April 3, by the Chicago Tuberculosis Institute at 19 W. Jackson Boulevard. Dr. Theodore B. Sachs, president of the institute, made a plea for the advanced consumptives at the meeting, April 4. On April 5, Dr. Robert H. Babcock spoke on "The Methods of Dealing with Tuberculosis," and in the evening a meeting for nurses was held at which Dr. Edward C. Rosenow and Miss Adelaide L. Walsh, president of the Illinois Association of Graduate Nurses, delivered addresses.

### IOWA

**Clinic to be Established.**—Steps toward the establishment of a hospital and medical dispensary for the poor of Des Moines were taken by the city council at a conference between a committee of that body and Polk County Board of Supervisors and the Polk County Medical Society.

**Drake Building for Research.**—Physicians of Des Moines are considering the advisability of organizing an academy of physicians and using the present Drake Medical and Dispensary building for scientific research work. The proposition will be submitted to physicians of the state at the state society meeting in May.

**Hospital News.**—A site on which a general sanatorium is to be erected has been purchased in West Cedar Rapids for $20,000. Dr. S. W. Staads, Sioux City, is president of the company and Dr. F. C. Seemann, Sioux City, secretary.——The Keota Hospital opened to receive patients March 27.——The contract for the building of the new Memorial Hospital, Cedar Falls, was awarded March 28.

### KANSAS

**Dispensary Clinic at Bartlesville.**—Washington County Medical Society has established a free clinic at Bartlesville which is open three days in the week.

**New Hospital.**—At the annual Methodist Episcopal Conference of Southwest Kansas, held in Wichita, recently, it was decided to purchase a five-acre tract of land in Wichita, on which the Wesleyan Hospital is to be erected at a cost of $200,000.

**Personal.**—Dr. H. L. Steele, Pittsburg, who has been seriously ill with cholelithiasis, was operated on in Mount Carmel Hospital, March 27, with satisfactory results.——Dr. J. E. Foltz, physician at the State Reformatory, Hutchinson, has resigned.——Dr. Jessie Thomas Orr, Olathe, has been appointed a member of the Kansas State Medical Board.

### LOUISIANA

**New Officers.**—Saint James Parish Medical Society at Convent: president, Dr. J. L. Des Lattes, Paulina; secretary-treasurer, Dr. L. A. Gaudin, Convent.——Calcasieu Parish Medical Society at Lake Charles: president, Dr. S. G. Kreeger; secretary-treasurer, Dr. J. D. Tuten, both of Lake Charles.

**Personal.**—Dr. T. E. Wright, for several years a member of the State Board of Health, who has been doing very effective work for the hookworm commission in northern Louisiana, has resigned and will enter general practice in Monroe.——Dr. Benjamin A. Ledbetter, New Orleans, president of the State Medical Society, who was charged with writing unlawful letters and was on trial in the United States district court, was vindicated when the case came to trial, March 28, the jury rendering a verdict of acquittal without leaving their seats.

### MARYLAND

**Personal.**—Dr. Eric Pearce Gould, London, England, who is making a round of inspection of American hospitals, visited Baltimore last week.——Dr. William Gary Morgan gave a dinner in honor of Dr. John C. Hemmeter, March 29, at which Dr. Hemmeter made an address on "The Mental Characteristics of Great Medical Thinkers."

**Psychiatric Clinic to Open.**—The opening exercises of the Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore, will take place April 16-17-18. On the first afternoon, the session will be held at the clinic building. Dr. William H. Welch delivering the introductory address. Dr. Stewart Paton, Princeton, N. J., will speak on "The Clinic and the Community;" Henry H. Harlan, president of the board of trustees of Johns Hopkins Hospital will give "A Word of Appreciation," and Sir William Osler will deliver an address on "Specialism in General Hospitals," after which the building will be inspected and tea will be served. The morning session of the second day will be held in the recreation-room of the clinic at which Prof. W. F. McDougall will speak on "The Sources and Direction of Psycho-Physical Energy"; Prof. E. Bleuler on "Autistic Thinking"; Prof. A. Hoch on "Personality and Psychosis," and Dr. L. F. Wells on "The Personal Factor in Association Reactions." In the afternoon a visit will be paid to the Sheppard and Enoch Pratt Hospital where tea will be served. In the evening there will be a meeting at Osler Hall, Medical and Chirurgical Faculty Building, at which Dr. F. W. Mott will speak on "A Study of the Neuropathic Inheritance in Relation to Insanity;" Prof. O. Rossi on "Pellagra," and Prof. H. Cushing on "Psychic Derangement Associated with Ductless Gland Disorders." The exercises of the third day begin with a session at 10 o'clock in the recreation-room of the clinic at which papers will be read by Dr. Stewart Paton, Princeton, N. J., on "Primitive Mechanisms of Individual Adjustment;" by Prof. Heilbronner on "Demenz Probleme," by Dr. E. Jones on "Interrelation of the Biogenetic Psychoses," and by Dr. G. H. Kirby, New York City, on "Prognostic Significance of the Biogenetic Psychoses." At 1 o'clock, luncheon will be served at the Johns Hopkins Hospital and the session will be resumed at 2:30 in the recreation-room of the clinic, where an address will be given by Dr. Achucarro; Dr. C. B. Dunlap, New York City, will discuss "The Anatomical Borderline Between the So-Called Syphilitic and Metasyphilitic Disorders." Prof. A. M. Barrett will consider the "Disorders Connected with Anemia," and Prof. A. Meyer will deliver the closing address.

### MASSACHUSETTS

**Cutter Lectures.**—The Cutter lectures at Harvard Medical School on preventive medicine and hygiene were delivered by Prof. George C. Whipple of Harvard University, March 31, and April 2 to 5. The subject was "The Use of Vital Statistics with Truth, with Imagination and with Power."

**Money Needed for Tuberculosis Hospital.**—The Boston Association for the Relief and Control of Tuberculosis is urging the passage of an ordinance appropriating $125,000 for a hospital pavilion and two cottage wards at the Boston Consumptives Hospital. At present, all four of the state hospitals are full and there is a waiting list of at least 200 who need sanatorium care.

### MICHIGAN

**New Officers.**—Saginaw County Medical Society at Saginaw, March 16: president, Dr. Robert MacGregor; secretary-treasurer, Dr. A. R. McKinney, both of Saginaw.

**Asks Increased Appropriation for Hospital.**—Alderman Barnett of Detroit introduced a resolution in the common council March 29, directing the poor commission to submit a supplementary estimate increasing the appropriation of $600,000 for municipal hospital units to $2,000,000.

**New Hospitals.**—A society has been organized in Marshall to plan for the building of the city hospital in accordance with the will of the late Charles Pratt who left $65,000 for that purpose.——The first sod was broken, March 10, for the $25,000 tuberculosis hospital which is to be built for the Daughters of the Empire on the shore of Lake Erie, near Union.

### MISSOURI

**New Officers.**—Grand River Eleventh District Medical Association at Chillicothe: president, Dr. B. F. Reynolds, Brookfield; secretary, Dr. J. C. Shelton, Chillicothe. Chillicothe was selected as the place for the next annual meeting.

**New Staff for State Hospitals.**—The new staff of State Hospital No. 3, Nevada, took charge of affairs, March 17. Dr. W. P. Bradley, Windsor, is superintendent and Drs. Charles B. Simcoe, Jefferson City; William R. Summers, Conway, Laclede County, and Dawson, El Dorado Springs, are assistants.——The following medical staff has been named for State Hospital No. 1,

Fulton: superintendent, Dr. M. O. Biggs, Bowling Green; assistants, Drs. Herman S. Major, Hardin; E. E. Evans, Columbia, and Z. T. Knight, Monticello. They will assume office in June.

### St. Louis

**Talks on Cancer.**—At the meeting of the St. Louis Society of Pedagogy, April 5, Dr. Leo Loeb, director of the laboratories at the Barnard Free Skin and Cancer Hospital, spoke on "The Results of Animal Experimentation on Cancer," and Dr. Frederick J. Taussig delivered an illustrated lecture on "The Importance of Early Recognition of Cancer."

**Free Aid for Consumptives.**—The St. Louis Society for the Prevention and Care of Tuberculosis inaugurated a new plan, April 1, which, it is believed, will result in every tuberculosis patient in the city having the services of a skilled physician. For this work, 116 physicians from all parts of the city have volunteered their services and it will be under the supervision of Surgeon Paul M. Carrington, U. S. P. H. S., medical director of the society. At present the society cares for 519 patients and has a staff of thirty-five physicians and five nurses.

**Hospital Items.**—An isolation hospital has been authorized on Arsenal Street, just west of the City Sanatorium.——A tuberculosis day and night camp has been opened at 9500 South Broadway under the charge of the St. Louis Society for the Relief and Prevention of Tuberculosis. Twenty patients entered on the first day.——Dr. R. B. H. Gradwohl has opened a Pasteur institute to be operated in connection with the New York institution. Temporary headquarters are in the Victoria Building, but a laboratory and hospital in the West End is planned.

## MONTANA

**New Officers.**—Gallatin County Medical Society at Bozeman, March 25: president, Dr. C. S. Smith; secretary-treasurer, Dr. H. H. Judd, both of Bozeman.

**Personal.**—Dr. J. M. Scanland has resigned as superintendent of the State Insane Hospital, Warm Springs, and has been succeeded by Dr. A. C. Knight.

## NEBRASKA

**New Officers.**—Boyd County Medical Association at Spencer, March 11: president, Dr. Frank E. Keep, Spencer; secretary, Dr. C. L. Hooper, Butte.

**Personal.**—Dr. C. P. Fall, Beatrice, celebrated the twenty-fifth anniversary of his entrance into practice of medicine, April 1. In the afternoon the Gage County Medical Society held a special session in which out-of-town guests participated, and in the evening Dr. Fall gave a banquet to about forty medical men of Beatrice and vicinity.——Dr. Calvin Starr, Beatrice, celebrated his ninety-first birthday anniversary, April 2.——Dr. and Mrs. William R. C. Neumarker, Columbus, sailed for Europe, March 20.

## NEW YORK

**New Officers.**—Utica Medical Club: president, Dr. Raymond A. Kempf; secretary-treasurer, Dr. F. S. DeLong.

**Personal.**—Dr. Myron Lipes, Cobleskill, has returned to the Albany Hospital on account of a recurrence of septicemia.——Dr. W. Louis Hartman, Syracuse, who is about to leave for Detroit, was the guest of honor at a dinner given by railway officials of the New York Central Lines, March 25. For twelve years Dr. Hartman had been local surgeon for the roads entering Syracuse.

**Hospital Notes.**—The Lestershire Hospital is overcrowded and there is urgent need of an increase in its capacity.——It is proposed to purchase Riverview Academy, Poughkeepsie, and remodel it as a general hospital to be known as St. Barnabas Hospital. For this purpose the St. Barnabas Fund, which now amounts to $35,000, will be available.——The plans for the proposed mixed-infection pavilion at the Syracuse City Hospital have been approved. It is to be a pressed brick and sandstone structure and will cost about $20,000.

**Work of the New York Milk Committee.**—The sixth annual report of the New York Milk Committee has just been made public. The report puts special emphasis on the need of practical eugenics and the instruction of mothers, giving the details of experiments that it has recently made in this line of work and calling special attention to the fact that from one in every ten to one in every six babies dies during the first year of life, and that nearly one in every three of these deaths occurs during the first month of life and is due to congenital causes. Deaths of infants from every other cause decreased during 1912, but those from congenital causes increased. Certain tenement districts were selected and instruction given the mothers who came to the milk stations. The committee gave this special instruction to 1,375 mothers, caring for them for a month after the birth of their babies, and as a result deaths among the children of these mothers were nearly one-third less in proportion than among those born in Manhattan as a whole. Another portion of the report dealt with the Babies' Welfare Association, which, it was stated, now embraced eighty different organizations. The report also related the achievements of the committee in securing better milk for restaurants and lunch counters. The committee has also been instrumental in securing the establishment of a national standard of pure milk.

**Health Finance Investigation.**—A committee appointed by the governor to inquire into the financial conduct of various state departments has reported to the legislature. This committee considered the request of $2,000,000 for new buildings on Hoffman and Swinburne Islands but did not think it wise to expend the money for this purpose at present. They believed that the State Health Department should be run on $46,000 less than was used last year. In regard to the appropriation of $17,000,000 requested for maintenance of state hospitals and charities, the committee stated that the state had practically no control over the expenditure of this money and urged that the policy of state institutions should be directly under its supervision. The latter statements were the occasion of a special meeting of the State Charities Aid Association which protested that no expenditures were made that were not passed on by the fiscal supervisor of the State Hospital Commission. They expressed the opinion that the conclusions of the investigating committee were hasty and inadequate, as the state institutions were too numerous and the administration too complicated to be passed on in such a cursory investigation. Resolutions were passed for presentation to the governor urging the continuance of appropriations for new buildings and showed that it would be most unfortunate if the progress of the state institutions was hindered even for one year. Two more institutions for the insane were urged as necessary, but the plan of using the Creedmoor rifle range as a site was opposed.

**Gift for Social Laboratories.**—Mrs. Elizabeth Milbank, Anderson, has given $650,000 for social welfare laboratories to be conducted by the New York Association for Improving the Condition of the Poor. This will be known as the "Milbank Memorial Gift" and makes possible the establishment of the department of social welfare to conduct experimental laboratories for demonstration of the practicability of preventive and constructive measures. The donor expects the enterprise to be conducted under the supervision of the department, to deal with public health and hygiene, the welfare of school children and food-supply. The first of these subdepartments will make a searching and thoroughly scientific inquiry into the subject of ventilation of school and other public buildings and for this purpose a committee of experts will be organized for independent research and experimental work. The subcommittee on school children will enable the school-lunch committee to extend and broaden its admirable work of serving hot lunches approximately at cost to school children; will take up the problem of extending and improving the system of medical inspection of school children and increasing the clinical facilities for treatment of physical defects of school children, especially of the teeth. The subcommittee on food-supply will make investigations concerning the scientific production of various articles of food, its purchase in larger quantities, its scientific storage, its efficient and honest handling and the latest facts as to relative food values with the object of ascertaining how the cost of food to the consumer can be reduced and its nourishing qualities increased.

### New York City

**Personal.**—Dr. and Mrs. Richard Derby sailed for the Mediterranean, April 5.——Dr. Frank H. Clark, Brooklyn, is suffering from septicemia due to an operation wound.

**Hospital for Prisoners.**—A building adjoining the Tombs has been renovated, fitted up and opened as a hospital for prisoners. Dr. LeRoy Hamilton has been appointed resident physician.

**Tribute to Bristow.**—At the dinner of the Brooklyn Medical Society, March 27, Justice Isaac Franklin Russell paid eloquent tribute to the late Dr. Algernon T. Bristow, stating that his unerring accuracy of hand, knowledge and wisdom saved many lives, making it only right that this tribute should be paid him.

**For Charity.**—In response to the expressed wish of Pope Pius X, and with the active cooperation of Cardinal Farley, a

twelve-day campaign will be begun on April 5 for the purpose of raising $100,000 or more for the erection of a new building for Columbus Hospital, the principal refuge in sickness for a population of more than 700,000 Italians in this city.

**Public Warned Against Soda-Fountain.**—Dr. Lederle of the Department of Health states that a preparation of soapbark known as saponin is extensively used in this country in making soft drinks. This substance is a powerful poison and unless wholesome substances can be used for producing the foam, it should be shunned. Dr. Lederle states that the shortage of inspectors makes it impossible for the Department of Health to guarantee the purity of soda water drinks and advises the public to avoid them.

**Pellagra Work to Continue.**—The Pellagra Commission, whose headquarters are at the Postgraduate Medical School and Hospital, and which went to Spartanburg last summer for the purpose of making investigations into the cause and remedy of pellagra will again go south to carry on its work during the summer months. The work is supported by Col. Robert M. Thompson and John H. McFadden. The personnel of the commission is the same as last year: Capt. Joseph F. Siler, U. S. A.; P. A. Surgeon Philip E. Garrison, U. S. N.; Dr. Ward J. MacNeal, assistant director department of laboratories of the New York Postgraduate Hospital, and Allan H. Jennings and M. V. King, entomologists of the Bureau of Entomology of the Department of Agriculture.

## OHIO

### Cincinnati

**In Memory of Lazear.**—On April 13 the Blue Hydra Society of the University of Cincinnati held open house and tree day in memory of Dr. Jesse W. Lazear, who gave his life in the investigation of yellow fever in Cuba. Dr. Paul G. Woolley, dean of the Medical College, who was Lazear's classmate, delivered the address of the afternoon and letters were read from President Wilson, ex-President Taft and others.

**Personal.**—The Safety director has appointed the following as members of the junior staff of the Cincinnati Hospital, on the recommendation of the senior staff: Dr. C. J. Broeman, junior dermatologist; Dr. Edward A. Wagner, junior pediatrist; Dr. C. H. Weintz, junior laryngologist.——Dr. F. J. Boyd has resigned as assistant superintendent of the Antituberculosis Hospital.——Drs. Ray Sattler and Theodore Wenning, who were both taking medical courses in Berlin, have left that city for Belgrade, Servia, for service in the military hospitals.

## PENNSYLVANIA

**Hospitals Combine.**—The managers of the Todd Hospital, Carlisle, have agreed to merge with the proposed Carlisle Hospital, provided that one of the buildings of the new group shall be designated "Todd Hospital."

**Personal.**—Dr. J. S. Donaldson, Bellevue, was operated on for appendicitis in the Suburban General Hospital, Bellevue, March 26.——Dr. A. Trapold, Wilkes-Barre, has been elected superintendent of the Nanticoke City Hospital.——Dr. F. A. Rhoads, chairman of the Morals Efficiency Commission of Pittsburgh, is reported to be seriously ill in Lakeside Hospital, Cleveland, following an abdominal operation.——Dr. J. MacFarland, Philadelphia, has returned from abroad.

### Philadelphia

**Permit for Surgical Ward.**—A permit has been issued for a $200,000 six-story surgical ward at the southwest corner of Thirty-Fourth and Spruce Streets for the University of Pennsylvania.

**City Must Care for Idiotic Children.**—According to a decision by Judge Staake, handed down in Quarter Sessions Court on April 1, the city of Philadelphia is legally bound to support feeble-minded children who have no parents or relatives.

**Rush Lecture.**—The fourth Rush lecture was given at the University of Pennsylvania (New Medical Laboratories, Lecture Room B), April 2, by Prof. W. B. Cannon of Harvard University, on "Some Studies on the Bodily Effects of Fear and Rage."

**Steinbach Memorial Meeting.**—Members of the medical profession and the Philadelphia County Medical Society attended a memorial meeting for the late Dr. Lewis W. Steinbach, which was held at Rodeph Shalom Temple, March 30, under the auspices of forty local and national Jewish organizations.

**Special City School for Cripples.**—In September, the Horace Binney School at Sixth and Spruce Streets, will be opened to crippled children. Omnibuses will call for them and the schoolrooms will be furnished for their comfort. The decision to open this school was reached by the Board of Education, following an investigation conducted by Miss Blanche Jones of the Public Education Association.

**Tuberculosis Workers' Conference.**—The third annual Pennsylvania Conference of Tuberculosis Workers was held at the Bellevue-Stratford Hotel, April 4. There were sessions morning and afternoon, followed by a dinner at the Sketch Club on South Camac Street. The futility of large institutions for the care of tuberculosis patients, the necessity of adopting the unit plan or segregation of different races and classes of patients, and the general localization of the fight against the disease by the establishment of county sanatoria, were the principal suggestions advanced by the speakers. At the afternoon session the following officers were elected: president, Asa W. Wing; secretary, Dr. Ward Brinton.

## GENERAL

**Prevention of Infant Mortality.**—An English-speaking conference on the prevention of infant mortality will be held in Caxton Hall, Westminster, London, August 4-5, under the auspices of the National Association for the Prevention of Infant Mortality and the Welfare of Infancy. The conference will convene immediately before the opening of the International Medical Congress. The subjects treated will be the responsibility of central and local authorities in infant and child hygiene; the administrative control of the milk-supply; the necessity for special education in infant hygiene; medical problems in infant nutrition and antenatal hygiene. Dr. Henry L. Coit, Newark, N. J., is chairman and Dr Philip Van Ingen, 125 East Seventy-First Street, New York City, secretary of the American committee.

**Bequests and Donations.**—The following bequests and donations have recently been announced:

Federated Jewish Charities of New York, $10,000, by the will of Jerome Hilton Waterman.

St. Michael's Hospital, Newark, N. J., the entire estate of Charles Bloom.

Free Hospital for Incurables, New York City, $8,000; Hospital for the Ruptured and Crippled, $2,000, by the will of G. H. Morgan.

Adirondack Cottage Sanatorium, Association for Improving the Condition of the Poor, and the Labrador Mission, each $5,000, and Presbyterian Hospital, New York City, $7,500 by the will of Henrietta Penfold.

Harvard College, a contingent bequest of $50,000 to be added to the Ellen Osborn Proctor fund for the study of chronic diseases, by the will of Abel H. Proctor.

Mt. Sinai Hospital, New York City, $10,000 for the endowment of two beds in memory of the testator's mother and grandmother, by the will of Theodore B. Dale.

Perry (Ia.) Hospital, $17,639.40 by the efforts of the Kings Daughters.

Mt. Sinai and General Hospitals, New York City, each $2,500 by the will of Simon E. Bernheim.

**Eugenics Record Office.**—The Eugenics Record Office which was established at Cold Spring Harbor, Long Island, N. Y., in October, 1910, by Mrs. E. H. Harriman and has since been active in this field, has recently entered on a new stage of development. A board of scientific direction has been organized, consisting of Prof. Alexander Graham Bell, chairman; Dr. William H. Welch, Baltimore; Prof. Irving Fisher, New Haven, Conn.; Dr. Lewellys F. Barker, Baltimore; Dr. E. E. Southard, Boston, and C. B. Davenport, secretary of the board and resident director. The board met at Cold Spring Harbor, March 21, for organization. The aim of the office was defined to be first, to promote researches in eugenics that shall be of utility to the human race. This includes the study of America's most effective blood lines; the methods of securing the preponderance and relative increase of the best strains; the study of the origin of, and the best methods of restricting the strains that produce the defective and delinquent classes of the community; the study of the method of inheritance of particular traits; the study of the consequence of marriages of close kin; the study of miscegenation in the United States and the study in both this country and abroad of the family histories of permanent immigrants. The second aim is the publication of the results of these researches; the third, the provision of a fireproof building for the preservation of eugenic records, including genealogic works and town histories and the fourth aim, is the provision of an administrative office and a staff to carry out the work. The new home of the office is being rapidly pushed to completion. The board of scientific directors will meet each spring at Cold Spring Harbor to consider the projects most worthy of support during the next fiscal year and will meet again in November to receive a report of the work of the office for the preceding fiscal year. The resident director is placed in general charge of this plan and operations, and is authorized

in the name of the board to ask for and receive funds for carrying on the work of the office. The board also voted in favor of the organization of a eugenics research association, for which a meeting will be called early in June.

## LONDON LETTER

*(From Our Regular Correspondent)*

LONDON, March 29, 1913.

### The Profession and Trade-Unionism

As stated in a previous letter to THE JOURNAL, during the struggle against the insurance act the proposal was brought forward to convert the British Medical Association into a trade-union, that it might enjoy the privileges and immunities conferred by law on trade-unions. Examples of these are the power to make a levy, and immunity from actions for libel or damages done to employers by combinations interfering with their business. Naturally the proposal, so contrary to the traditions of the profession, received a good deal of opposition. Many of the methods of trade-unions were considered discreditable. The point was raised at one of the representative meetings of the British Medical Association and was referred to its attorney, who declared that he did not think it was possible for the association as at present constituted to form itself into a trade-union. Since the defeat of the association's policy, the question of forming a trade-union has become a burning one, and is giving rise to an extensive correspondence in the *British Medical Journal*. It has been cogently pointed out that the profession is very individualistic, and therefore quite unsuited for trade-unionism. Thus free competition is dear to the majority of physicians, and "free choice of doctor" was one of the battle-cries of the recent struggle. The relation of the profession to the public, looked at from the commercial point of view, is rather that of shopkeepers than that of artisans working for a wage. The difficulty of forming any sort of union in the former class is obvious.

Nevertheless, the militant section of the profession and of the British Medical Association which adopted an uncompromising attitude to the insurance act to the last, has now formed an association called the National Medical Guild, which is practically a trade-union. The objects of the guild are: to regulate the relations between medical practitioners and their employers and between medical practitioners and physicians; to regulate the rates of payment; to regulate and control the conditions of contract practice and make provision for the creation of an organization or organizations to supply medical service; to establish a fund or funds; to promote legislation; to employ the funds of the guild for the political objects defined according to the trade-union act of 1912; to take active part in political propaganda in the interests of the medical profession; to further the interests of the profession in all legitimate ways and to employ the funds of the guild for such purposes; to give legal assistance to members and officers; to provide for the insurance of members, either directly or by arrangement with insurance companies, against death, illness, third-party liability and for damage caused to and by motor cars or other vehicles, and to publish books, papers and literature in furtherance of the ends of the guild. The annual subscription for members is 85, and in the event of a levy being decided on, each member shall contribute such sum as shall be determined; but in no case is the amount to exceed 825 in any one quarter of the year unless a special ballot be obtained for the purpose. Any member who is unwilling to contribute toward the "political objects" of the guild, if he so desires, shall be exempted from the payment of such proportion of the levies and contributions as are employed by the guild for the furtherance of such objects. By political objects are meant the payment of the expenses incurred by a candidate for Parliament or his support in other ways before or after election.

### The Physical Condition of Schoolchildren

Sir George Newman, medical officer of the Board of Education, has issued an important report on the physical condition of the schoolchildren throughout the country. There is an appalling amount of dental caries, even in country areas, where among pupils aged 5 years, only 7 or 8 per cent. have sound teeth, and among those aged 12 only 3 or 4 per cent. The average number of decayed teeth at the age of 5 is 6 in country boys and 5.8 in girls; in town boys and girls the figures are 7 and 6.5, respectively. In children suffering from adenoids sufficient to require medical treatment, there is an excessive amount of caries, which suggests a connection between the two conditions. Sir George Newman thinks that the most important factor in the production of caries in children is unsuitable diet from infancy upward. The immediate cause is the accumulation about the teeth of fermentable carbohydrate material, due to the form in which the carbohydrate food is taken, or to the absence of detergent forms of fibrous food taken at the same time or subsequently. Improvement can come only through education and change in the dietetic habits. The next line of defense is the maintenance of the teeth and mouth in proper condition, which can be secured in large degree by the use of the tooth-brush. The third line of defense is the treatment of dental caries at the onset. In several schools tooth-brush drill and tooth-brush clubs have been inaugurated. In most localities dental clinics have been established.

Increasing provision has been made for the education of defective children, for whom there are now 335 schools. One result of medical inspection has been to bring to light a number of children temporarily or permanently defective, for whom education in the ordinary school is unprofitable. Formerly the detection of such children was left to lay officers and teachers. Special schools are required for dull and backward children and for children who are definitely feeble-minded. Graded classes and residential schools are required for cases needing continuous care. Associated with these schools Sir George Newman recommends that there should be colonies for industrial training. In all cases there should be systematic after-care and supervision.

### The Profession from the Socialist Point of View

Dr. Alfred Salter, a socialist physician, has severely criticized the present medical arrangements at a congress of the labor party. He said that our health service had grown up without any prearranged plan, and chaos had come about in somewhat the same way as occurred in the growth of large towns. Working-class physicians, under the new conditions brought about by the insurance act, were overworked, while practitioners in other districts had not enough work to keep them going. The great bulk of the medical men in industrial districts were not looking forward to any holidays this year, because they knew that if they went away there would be no one to take their places.

## PARIS LETTER

*(From Our Regular Correspondent)*

PARIS, March 21, 1913.

### Responsibility of the Physician

Much interest has been excited in the profession by a recent decision in the Paris Court of Appeals which contains a new interpretation of the doctrine of medical responsibility which, if its validity is admitted, will have serious consequences for physicians. Up to the present no action for damages has been allowed unless the plaintiff proves that the physician has committed a fault or negligence in his application of treatment.

In the suit in question, the plaintiff alleged against Dr. Delherm certain negligences in the application of roentgenotherapy. The court while recognizing that the plaintiff had not proved that Dr. Delherm had committed a fault or negligence in the application of the treatment, condemned the physician to pay damages on the ground that the physician is responsible for the consequences of the application of a treatment which presents so many dangers in itself, unless the health of the patient demands the employment of this treatment. In this case the Roentgen ray had been used to remove a hairy growth on the plaintiff's chin. After the application of the ray the patient had a dermatitis of the second degree.

The court believed that while the physician should not hesitate to use this treatment when demanded by the health of the patient, nothing justified the assumption of such a risk for so trifling a result as the removal of a mere physical imperfection. According to the judge, Dr. Delherm ought to have warned the patient of the dangers she might run and have refused to apply the treatment. The court, therefore, condemned Dr. Delherm to pay the plaintiff 81,000 (5,000 francs) as damages. The Syndicat médical de Paris protested energetically against the admission of such a principle. If the physician should be obliged to warn the patient of the possible danger of each medical procedure which he employs, the patient would certainly refuse to submit to the necessary treatment. The most matter-of-course medical procedure, such as a hypodermic injection, has dangers which, however, present themselves only in a very small proportion of cases. Patients thus unnecessarily frightened by the discussion of all possible hazards would many times refuse the necessary treatment, and human lives would be sacrificed.

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### International Congress of Physical Education

March 17, under the presidency of M. Raymond Poincaré, President of the Republic, the inaugural session of the International Congress of Physical Education was held. The president of the Congress is Dr. Gilbert, professor of clinical medicine at the Faculté de médecine de Paris, and the secretary general is Dr. Weiss, professor of medical physics at the same school. The work of the congress is divided among several sections, two of which are of especial medical interest, namely, the section on physiology of physical exercise and the section on kinesitherapy. The latter section is concerned especially with medical gymnastics considered as a prelude to physical education of mentally backward children, and with various kinds of respiratory gymnastics, etc. There is an exposition connected with the congress including a scientific section where are found tracings, photographs, statistical tables and mensuration apparatus for the establishment of a physiologic basis of sports; an artistic section where contemporary works of art inspired by sports or open-air life are collected, and a historical section showing the history of various sports.

### The Value of Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis

Apropos of the recent paper of Dr. Louis Renon on the same subject (THE JOURNAL, Feb. 15, 1913, p. 532), Dr. Achard, professor of general pathology and therapeutics at the Faculté de médecine de Paris, read at one of the last sessions of the Académie de médecine a paper emphasizing the fact that the treatment of pulmonary tuberculosis by Forlanini's method, not to speak of its limited indications, can be employed only in hospitals and sanatoriums where the patient can be given roentgenoscopy and roentgenography at each new insufflation. Moreover, the number of patients cured by this method is very small in comparison with the number of patients treated, and relapses have been observed. Finally, alterations from compression of the healthy parts of the pulmonary parenchyma are to be feared. Although the ultimate results of the method are still uncertain, the immediate results are of considerable practical value in certain cases, for they permit one to gain time.

### Rewards for Professional Courage

At the last meeting of the commission of the Carnegie Foundation, a silver medal and a sum of $400 (2,000 francs) were awarded to Dr. Carpentier, an intern of the hospital of Rouen, who, when scarcely recovered from scarlatina, was stricken, April 1, 1912, with a diphtheric angina in a most serious form, contracted in the repeated employment of intubation on a child with diphtheria. After a long and painful convalescence Dr. Carpentier remained afflicted with permanent claudication and atrophy of the right leg and hand.

A silver medal was awarded to Dr. Gallini, physician at Susa (Tunis), who died a victim of his devotion to duty. He had contracted typhus at the bedside of indigent patients whom he attended with unwearied devotion in the hospital and the prison. An annual and renewable grant of $200 (1,000 francs) was made to Mme. Gallini and an annual award of $40 (200 francs) to each of her three children up to the age of 16.

### Antityphoid Vaccination in the United States Army

On March 11 Professor Chantemesse reported to the Académie de médecine the excellent results obtained in the American Army by an antityphoid vaccine consisting of a pure monovalent culture of typhoid bacilli sterilized by heating, that is to say, the vaccine of which Chantemesse claims to have established the efficacy experimentally for the first time a quarter of a century ago.

This paper elicited a very warm discussion in which *agrégé* Professor Netter and Professor Vincent took part. Netter remarked that the vaccine employed in the American Army is sterilized only to 53 C. (127.4 F.) It is therefore distinctly different from that which was formerly recommended by Chantemesse, which was sterilized to 120 C. (248 F.) In the latter temperature this vaccine has become completely inert and incapable of conferring any immunity. Netter insisted, moreover, on the importance of the researches of Pfeiffer and Kolle and gave these authors and Sir Almroth E. Wright the honor of having applied antityphoid vaccination to man. In the experiments of Chantemesse, one mouse out of four died, which was scarcely an encouragement for using this method on human patients. Vincent also believes that heating to from 100 to 120 C. (212 to 248 F.) destroys all the immunizing qualities of cultures of typhoid bacilli. The American vaccine is only a variant of that of Pfeiffer and Kolle. The good results of this vaccine are incontestable, but in order to appreciate them at their true value, it is necessary to take account of the epidemic index of the country in which one is operating. In America typhoid fever is comparatively limited in its ravages, for in 1907-1909 the typhoid-fever morbidity was only 3 per thousand, while in the Indies, where the vaccine of Wright and Leishman is used, this morbidity reaches 15 to 35 per thousand. Among heated vaccines Vincent gives the preference to those which are sterilized at the lowest temperature, especially to the vaccine of Leishmann, which is heated only to 53 C. (127.4 F.), a temperature which is the best to preserve its vaccinogenic power.

## BERLIN LETTER

*(From Our Regular Correspondent)*

BERLIN, March 21, 1913.

### Personal

At his own request, Professor von Olshausen has been retired on account of his age.

Professor Ficker, for many years assistant at the Berlin institute of hygiene, has been given leave of absence, so that he may take charge for one year of the bacteriologic institute at São Paulo, at the request of the Brazilian government.

At the international exposition for social hygiene at Rome, Professor Sommer received a cross of honor, and the clinic conducted by him was awarded a grand prize.

Professor Mönckeberg of Giessen has been called to succeed Professor Lubarsch as director of the institute of pathology at the Düsseldorf academy for practical medicine.

### Significance of the Bovine Tubercle Bacillus to Man

The Berliner medizinische Gesellschaft has continued through several meetings—following an address by Professor Orth—a discussion on the subject of the importance of bovine tuberculosis for infection of man. Orth maintained that the bovine bacillus is actually dangerous to man. While the bovine bacillus, either alone or together with the human type, has been found in pulmonary tuberculosis in adults in only a few cases, about 10 per cent. of all tuberculosis in children, according to his own observations, is caused by the bovine type. Similar findings have been made also by other investigators in different countries. The determination of the number of children who remain healthy in spite of drinking milk from tuberculous cows offers no solution of this problem; it is impossible to declare a living child free from tuberculosis, since the absence of tuberculous lymph-nodes can be determined only by necropsy.

The establishment of the disease depends not only on the bacteria but also on the local predisposition. The fact that a person may be injected with bovine tubercle bacilli and remain healthy proves nothing. Since we have learned of the mutation of bacteria we must also consider that one type may change into another. For this reason also the bovine bacillus should not be considered harmless. The immunity acquired during childhood does not prevent a reinfection. A slight degree of reinfection in adults may cause pulmonary tuberculosis. Hence, Orth concluded that a vigorous campaign should be carried on against the bovine tubercle bacillus on the part not only of veterinarians but also of physicians. Professor Westenhöfer took the same stand, in accordance with his experience in Chile. Professor Weber, the new municipal medical councilor of Berlin, declared that judging from the findings of the Imperial Bureau of Hygiene, the danger from the bovine type is small. In his opinion the reasons presented by Professor Orth are not so important. The theory of transformation of the two types is not sufficiently supported. According to Prof. F. Klemperer, even when the bovine bacillus is present in man its significance as a cause of disease has not been shown. As can be seen from the necropsy findings of Naegeli and others, even the true tubercle bacillus is not always infective. Kitasato proved in 1904 that the non-use of cow's milk for food in Japan has no influence on the variety and frequency of tuberculosis. Prof. Max Wolff reported a successful proof of the bovine origin of the bacillus in a case of primary intestinal tuberculosis by its transmission to a calf.

Dr. Eckert, assistant at the Heubner clinic, reported that among 192 children who were examined for bovine tuberculosis and human tuberculosis with the von Pirquet reaction, ninety-two reacted positively, and of these seventy reacted both to bovine and to human tuberculin; of the remaining twenty-two twelve reacted for the bovine type and ten for the human bacillus.

In opposition to Professor Weber, Professor Orth laid stress in his conclusion on the fact that the bovine bacillus is of significance not only to the individual but also in the spread-

ing of tuberculosis as a nation-wide disease. According to Professor Bendix, 27,000 infants die in Germany annually of tuberculosis. As computed by a member of the Imperial Bureau of Hygiene, 10 per cent. of these deaths are due to the bovine bacillus, so that 2,700 infants die annually of bovine tuberculosis. For the purpose of judging how many there are altogether of those who suffer from bovine tuberculosis, we have at present only the von Pirquet reaction at our disposal. A school physician in Berlin has found it positive in schoolchildren by about 70 per cent. According to this we must assume that 400,000 children are infected annually with the bovine type, and this number is sufficient to justify speaking of it as a nation-wide disease (*Volkskrankheit*). Besides, about half of all lupus cases belong to the bovine type.

### Insurance for Disability in 1911

The income from dues of the thirty-one German insurance companies amounted in 1911 to 852,451,405 (209,805,623 marks). In closing the books for 1911 it was found that 141,532 pensions or indemnities were paid in 1911. To meet the demands of the imperial insurance law, 844,805,043 (179,220,174 marks) were expended.

## VIENNA LETTER

*(From Our Regular Correspondent)*

VIENNA, March 25, 1913.

### Ophthalmologic Postgraduate Classes

An interesting experiment was made recently in the clinic of Professor Dimmer, where a number of ophthalmologists had been asked to listen to a series of lectures on the theory of optics for physicians. Two eminent collaborators of the optical institute of Zeiss explained the modern conception of the problems concerned, and showed also Gallsbrand's instruments. Twelve theoretical lectures and eight demonstrations were given, and the difficult subject was explained in a very satisfactory manner, so that a repetition is probable.

### The Jubilee Hospital of Vienna

A short while ago the Jubilee Hospital (founded three years ago on the eightieth birthday of our emperor) was opened. It adds another thousand beds to the hospital beds already existing in this city. We have now in Vienna 9,200 beds in public hospitals, or 44 per ten thousand inhabitants. In Berlin the figure is 49 per ten thousand. Therefore, the constant complaint of hospital scarcity which so frequently was heard of, will be hardly justified any longer. It is a fact that in the inclement time of the year (December till May) there was really frequently a lack of hospital accommodations for the poorer classes. This will be done away with for a number of years to come; for we are just now in a period of new hospitals. A large hospital for children is in course of erection, and what we require yet, a large increase in the number of beds for infectious diseases and for the housing of tuberculous persons, is also in stage of preparatory consideration.

The Jubilee Hospital contains one hundred beds for surgery patients of the first and second classes. This is an institution for the middle classes of the population who can afford to pay an adequate fee for operations and hospital treatment, and obtain a good deal of house comfort, which, of course, is out of the question in the wards with ten or twenty-five beds per room. The patients cannot, however, select their medical adviser or surgeon from outside the hospital-staff, and so far there is a difference from the sanatorium or private hospital or "nursery-house" method. Altogether, there are in Vienna about 250 beds already in existence which are governed by the abovementioned rules. The patients pay from 8 to 12 kronen ($1.50 to $2.50) a day, while the ordinary hospital patient has to pay about 50 to 70 cents a day, or the state has to pay for him. The institution of "paying wards" finds much resistance among the Vienna practitioners, who believe it to be detrimental to their interests. For the ordinary patients the hospital contains twenty-four wards, each holding eighteen beds, and twelve wards for each twenty-six patients. These will accommodate about 750 patients, while about 150 beds are arranged in small rooms holding from two to eight beds each. There are are altogether two medical departments having 238 and 248 beds, one surgical department with 122 beds, one gynecologic department with 82 beds, one dermatologic-syphilitic department with 149 beds, one for 48 cases of diseases of the uropoietic system, 53 ophthalmologic beds and a department for nose, throat and ear cases with 60 beds. A special pavilion for suspicious and infectious cases is situated outside of the hospital, but otherwise the hospital is not built on the system of pavilions, since there are no more than three two-storied large buildings. The divisions between the various departments are given in a vertical, not horizontal, plane. Ample provisions are made for accessory spaces, kitchens, recreation spaces, baths, nurses' rooms and lavatories; there is also a large garden covering an area of 152,000 square meters (200,000 square yards). Of course, all the latest equipment for the outpatient departments, as well as the therapeutic equipment, have been provided for. It is interesting to note that physical therapeutic equipment (hydrotherapy, mechanotherapy, electrotherapy and phototherapy) are now established in all the general hospitals of this city. The hospital is intended, as the statutory regulations say, first, "for the benefit of the patients, and no ill person can be refused admission except when the hospital is filled." It is also a teaching hospital. Treatment must employ the recent achievements of science and practice when appropriate. This is a concession to a public sentiment, which for some time was much propagated by a certain political party, which said that the hospitals regard their inmates only as objects for experiments. This foolish idea was for some time strong enough to cause its consideration in the above-mentioned regulations. At the opening ceremony a few interesting figures were given by one of the speakers. Thus Austria contains now about 59,000 hospital beds; forty years ago it had only 30,000; eighty years ago only 7,000. The population, however, has doubled only within the last eighty years, so that sanitary development as expressed in the number of hospital beds was much faster than expected. At present we have eighteen beds (in Austria) for each ten thousand inhabitants, while Germany has thirty-seven. So there is plenty of work yet to do. But Vienna compares favorably with Berlin in this respect.

### Instruction in Medical Ethics and Economics

The Wirthschaftliche Organization, a young but energetic body for promoting the medical and economic interests of our profession, has instituted a novel measure in establishing regular instruction for students of medicine and young graduates of our hospitals in that special branch which has been taught nowhere until now, and which is so important in later life, medical ethics and economics. These instructions will be given in the shape of lectures delivered by experienced practitioners under the three headings, and will cover the relations of the practitioner (1) to the public, (2) the state and municipal authorities, (3) the sick clubs (Krankenkassen). These lectures will also give information regarding taxes and duties (a difficult problem in this country), and the clauses of the old and new penal code which have a bearing on the practice of medicine; they will also teach the young man the problem of fees and the relations between physician and consultant, and instruct him in the routine of keeping books and recording cases. It is thought that this idea of the organization will meet with appreciation on the part of the profession.

## *Miscellany*

**Occupational Diseases in Italy.**—Italy has long had an institute at Milan devoted exclusively to research on industrial affections and to their treatment, the first of the kind in the world. It publishes a semimonthly journal *Il Lavoro*, now in its sixth volume, which discusses questions connected with the hygiene of wage-workers and prophylaxis of occupational injury. It is edited by L. Devoto, incumbent of the chair of occupational affections, and L. Carozzi privat-docent in the same line. The last number of *Lavoro* reprints the circular which is given to wage-workers. The circular emphasizes the importance of learning the special dangers of each trade and the means to avoid them, and the necessity for a medical examination as the resisting powers differ so widely in different persons. Among other points mentioned are the necessity for scrupulous care of the mouth and teeth, and keeping the nails and hair short. Hot breakfasts are also advised, and the working man is told that he should not return to his usual work at once on recovering from an acute infectious disease. Mouth-breathing should be corrected. The working man who finds his health being impaired by his work owes it to himself, to his comrades and to the trade he is engaged in to place

himself in the hands of a competent physician so that his case can be studied as a type. He should also call the attention of a physician to a comrade who he sees is suffering from an occupational affection. The working men who have had a course of treatment at the Milan clinic are proving apostles of hygiene and watchful sentinels when they return to their work. The fourth national conference on occupational affections is to convene at Rome, June 8 to 13, 1913. The secretary is Dr. A. Ranelletti, Lungo Tevere Mellini 17, Rome. Among the subjects to be discussed are hookworm disease, occupational diseases of the blood, and the professional pathology of railroad employees.

**Fall River Milk Regulations.**—Fall River, Mass., is one of the cities that endeavor to follow the classification of milk and the regulations of the National Committee on Milk Standards, except perhaps as to bacterial requirements. Features of the administration of the milk regulations in Fall River consist of large posters containing the sections of the city ordinance relating to milk production and distribution, and the regulations of the health department concerning the same subjects. These are intended to be posted in dairies and milk depots for the guidance of those engaged in the milk trade, and should serve as a constant reminder of the requirements. In this connection the annual report of the milk and dairy inspection division of the health department contains some interesting comments on the use of whole milk and condensed milk in Fall River. It is shown that on an average, each inhabitant uses 7¼ ounces a day, or less than an ordinary drinking-glassful for all purposes, including that used for cooking in both homes and restaurants. It is stated that the per capita consumption of cow's milk is less and the percentage of infants' deaths is higher in Fall River than in any other city, and it is believed that the use of condensed milk has a very important bearing on the death-rate among the infant population. As the report says, condensed milk is in no sense a substitute for fresh cow's milk; it does not contain the elements of nutrition in proper proportion or relation, and it is too expensive. Attention is called to the fact that eighteen brands of condensed milk in common use when diluted according to directions on the label, using an average of 1 part milk and 3½ parts water, would have an average of 7.29 per cent. of solids and 1.85 per cent. fats, which represents a very inferior quality of milk. The minimum quanty permitted by the statutes must contain 8.81 per cent. solids and 3.35 per cent. fats. The cost of condensed milk when diluted according to the above directions is 10.7 cents per quart. It is therefore said that the public is misled into the use of a very inferior article as a substitute for milk which is neither milk nor a safe substitute, and that they are paying nearly 36 per cent. more for it than for raw cow's milk.

**Value of Infant Consultation Stations.**—In the experience of The Essex County, N. J., Public Welfare Committee, in the city of Newark infant consultation stations are more efficient in lowering infant mortality than depots for the distribution of modified milk. The committee states as its opinion, as reported by Dr. Julius Levy in a paper read before the pediatric section of the Academy of Medicine of Northern New Jersey, and printed in the report of the committee, that ignorance on the part of the mothers is the greatest single cause of infant mortality, milk being secondary to this. It was found that though modified milk could be obtained at the milk-depots, few mothers could avail themselves of it and most of them were buying filthy store or bottled milk; the committee found that as a result of this the infant mortality from diarrheal diseases was actually higher at the end of the previous decade than at the beginning. It is the opinion of Levy that the milk-depot increases the number of artificially fed children, and that it does not reach the infants which require it most—those with the most ignorant or indifferent mothers, nor indeed when the mortality among infants is highest—during the first three months. The plan adopted in Newark was the establishment of infant consultation stations, with visiting nurses and physicians of the same nationality or speaking the language of the mothers and infants visited by them. The names of the infants were taken from the birth returns, and visits made usually within the first month after birth. It was the plan to induce all mothers, whenever possible, to nurse their infants. It was said that the failure to nurse in most instances is due wholly or largely to ignorance, inherent prejudice and superstitious beliefs that are fostered by anxious grandmothers, ignorant midwives, and also, unfortunately, indifferent physicians. In a less degree this is due to preventable social and economic conditions, overwork, under-nourishment, tuberculosis and other debilitating diseases. When the infants required additional milk, breast-nursing was not stopped, but modified milk was given. A simple plan of modification of milk was adopted and, with the exception of a very few cases, nothing but raw, diluted whole milk, cane-sugar, barley-water and salt were required, and the mothers were instructed how to make the modification of the milk with these materials. Emphasis is laid on the importance of simple milk-modifications, as only in this way, it is asserted, can rational and intelligent milk-modification come into general household and professional use. In the work of home modification emphasis is laid on clean milk, clean bottles and nipples, proper intervals of feeding and the avoidance of additional feeding. In Newark, by special arrangement, milk from tuberculin-tested cows was provided for the infants taken care of in these infant consultation stations. The result during the season of 1912, which this report covers, shows an infant mortality, among the infants taken care of, of 2.3 per cent., and excluding several cases which should properly be excluded, 1.9 per cent.

**Development of the House Fly.**—The eggs are deposited by the female, about one hundred and fifty in a batch, in manure or decaying organic matter. In a few hours, under favorable conditions, the eggs hatch and a small white grub emerges from each. Finding themselves in the midst of plenty, the larvae begin feeding and eat until the limit of their first skins is reached. Growth in this stage is extremely rapid, and in a few hours the skin is split and discarded, while the second skin, a size larger, supplants the function of the first. Feeding is then resumed and this process is repeated some four or five times. This is not only true of the house-fly but of the majority of the million kinds of insects. Four or five molts is the common number before the grub or caterpillar is full-grown and the next stage begun. In the case of the fly—unlike butterflies and moths—the last larval skin is not cast, but dries and forms the pupal case. I wish to emphasize the fact that the larval stage in insects is the season of growth, and is, moreover, the only period of growth and that after this stage is passed the insect never grows any more in bulk. Thus the next stage after the larva is known as the *pupa* or the chrysalis, and this is devoted entirely to development. In the house-fly development is very rapid, and is preceded by a process of dissolution, for if a pupa-case be broken open a short time after pupation, it will be found that there are no signs whatever of organs such as legs, wings, or even mouth-parts. A yellowish milky fluid will be found, and from this the complete adult fly is developed, under optimum conditions, in less than a week. Thus from the time the egg is laid until the emergence of the adult fly less than fifteen days may elapse.—C. K. Brain, *Monthly Bulletin*, Ohio State Board of Health.

**Louisiana and Child Labor.**—In Louisiana game has been the subject of protective legislation since 1857. It was not until nearly half a century afterward that Louisiana saw the need of a child-labor law. From August, 1910, to June, 1911, the Louisiana Board of Commissioners for the Protection of Game Birds and Fish spent in its work of conservation and culture approximately $129,081.86. During the same time only $900 was spent for factory inspection to serve the health, safety and comfort of upward of 76,165 wage-earners, a sum equivalent to twice as much as the Louisiana Oyster Commission spent for postage in one year.—E. F. Brown, member Nat. Child Labor Com.

# Association News

## ALUMNI TO MEET AT MINNEAPOLIS

### College Alumni and Other Reunions Provided for at the Minneapolis Session Next June

The Minneapolis Subcommittee on Alumni Meetings, of which Dr. E. K. Green, 1106 Donaldson Building, Minneapolis, is secretary, offers its services to alumni associations and similar bodies which wish to have reunions in connection with the next annual session of the American Medical Association in Minneapolis, June 17-20. The committee will be glad to assist in arranging meeting-places, advising about entertainment and making a complete list of the gatherings for publication. The committee particularly wants to know in each case whether or not the alumni association intends to provide any entertainment, and if so what sort. The time assigned for all these alumni events is Tuesday night. It is desired that all these events take place on that night, so as not to interfere with events planned for the other evenings.

### Hotel Reservations

Members of the Association who are planning to attend the Minneapolis session and who have not already reserved accommodations, can do so by writing either directly to the hotel of their choice (list in THE JOURNAL, March 8, 1913, p. 764) or to Dr. S. Marx White, 1106 Donaldson Building, Minneapolis, chairman of the Subcommittee on Hotels. Dr. White's committee will take pleasure in assisting members to find satisfactory lodgings. Requests for reservations addressed to this committee should state whether or not a private bath is desired; the number in the party; how many rooms and exactly the accommodations needed; the approximate rate, American or European plan, that the member plans to pay, and the scientific section in which he will register. It is not only a matter of great convenience to know one's local address before reaching Minneapolis, but, by making these arrangements now, the rush at the time of registration occasioned by the necessity of securing lodgings will be overcome, and the member will be ready to enjoy the scientific program immediately after registering.

### Health Boards to Meet

Among the organizations which meet just before the American Medical Association, the Conference of State and Provincial Boards of Health of North America is announced for June 13-14, meeting in St. Paul. Probably some of the meetings will be held on the campus of the University of Minnesota.

# Marriages

JAMES ALFRED B. ADCOCK, M.D., Jefferson City, Mo., to Mrs. Mary Sanborn Russell of Warrensburg, Mo., March 29.

ROBERT JAMES TALBOT, M.D., Niagara Falls, N. Y., to Miss Margaretta Mugele of Pittsburgh, Pa., April 2.

JAMES ALEXANDER WEST, M.D., Hancock, Md., to Miss Helen Venable Bridges of Charlotte, N. C., March 25.

ISAAC B. HIGH, M.D., Reading, Pa., to Miss Mary J. Miller of Linfield, Pa., at Philadelphia, March 24.

EARL STEVENS PORTER, M.D., to Miss Jaunita Blanche Palmer, both of Moore, Mont., March 26.

DELMAR FOSTER BICE, M.D., Toppenish, Wash., to Miss Edith Williamson of Tama, Ia., March 26.

VIRGIL W. MCCARTY, M.D., Rosedale, Kan., to Miss Bernice French of Lawrence, Kan., April 12.

JOSEPH ALBERT CHATARD, M.D., to Miss Alice Marie Wheelan, both of Baltimore, March 26.

HARRIS PAYTON MOSHER, M.D., to Mrs. Helen A. Clark, both of Boston, March 22.

DAVID F. MONASH, M.D., to Miss Edith Mayer, both of Chicago, April 8

# Deaths

**Jose Manuel Delgado, M.D.** Bellevue Hospital Medical College, 1872; acting assistant surgeon U. S. P. H. Service since 1896; a member of the Association of Military Surgeons of the United States; assistant to the chair of clinical and operative surgery in his alma mater from 1872 to 1876; a pioneer in the fight for Cuban independence; shot and macheted and left for dead in 1896; acting assistant surgeon U. S. Army during the Spanish-American War and in charge of charities and hospitals in Puerto Principe during the United States military occupation; for the last ten years on duty with the U. S. P. H. Service at the Ellis Island Immigration Bureau, New York Harbor and a resident of Brooklyn; died in St. Luke's Hospital, New York City, March 31, aged 62.

**George McClellan, M.D.** Jefferson Medical College, 1870; professor of applied anatomy in his alma mater; a member of the American Medical Association, American Association of Anatomists, Philadelphia Pathological Society and Philadelphia College of Physicians; consulting surgeon to the Howard Hospital, Philadelphia, and professor of anatomy in the Philadelphia Academy of Fine Arts; author of McClellan's "Regional Anatomy"; founder of the Pennsylvania School of Anatomy and Surgery and some-time president of the Philadelphia Medical Club; died at his home, March 29, from heart disease, aged 63.

**George Allen Staples, M.D.** Chicago Medical College, 1884; College of Physicians and Surgeons, New York City, 1885; a member of the American Medical Association; Mississippi Valley Medical Association, and Chicago Orthopedic Society; formerly a lecturer in the College of Physicians and Surgeons, Chicago; local surgeon in Dubuque for the Illinois Central and Chicago, Milwaukee and St. Paul railroads; surgeon to St. Joseph's, Mercy and Finley hospitals, Dubuque; died from cerebral hemorrhage, April 2, aged 53.

**James Clement French, M.D.** Pulte Medical College, Cincinnati, 1875; a member of the American Medical Association; until 1884 a practitioner and health officer of Greensburg, Ind.; thereafter a resident of Natchez, Miss.; health officer of the city until 1902, and from 1906 until his death; treasurer of several state Masonic organizations; a man esteemed and beloved by his fellow practitioners and the people at large; died at his home in Natchez, March 19, from nephritis, aged 57.

**Arnold Stedman, M.D.** Berkshire Medical College, Pittsfield, Mass.; a member of the American Medical Association; president of the general staff of St. Luke's Hospital, Denver, and consulting physician to Mercy Hospital, Denver; a veteran of the Civil War; for several years a member and president of the Denver School Board; one of the founders of the Colorado State Medical Society; while making a professional call, March 22, died suddenly from heart disease, aged 74.

**Marcellus B. Shupe, M.D.** University of Maryland, Baltimore, 1885; a member of the Medical Society of the State of Pennsylvania; local surgeon for the Baltimore and Ohio Railroad at Connellsville; a member of the Surgical Staff of the Cottage State Hospital; a member of the Board of Health; for three terms a member and once president of the local school board; died at his home, March 22, from the result of injuries received in a runaway accident a year before, aged 49.

**Richard M. Gano, M.D.** University of Louisville, Ky., 1850; a practitioner of Texas since 1857; a member of the legislature from Tarrant County in 1860 and 1861; brigadier general in the Confederate Army during the Civil War; a clergyman of the Christian Church since 1866; an officer and stockholder in many banks and large business enterprises; died at the home of his daughter in Dallas, March 27, from senile debility, aged 82.

**Hugh Angus Stewart, M.D.** University of Edinburgh, Scotland, 1904; M. R. C. P. Edinburgh, 1906; assistant professor of pathology in the College of Physicians and Surgeons, New York City; a member of the New York Pathological Society; who was engaged in important research work on the adrenal bodies; died in the Willard Parker Hospital, March 29, from scarlet fever, aged 30.

**John Samuel Shibley, M.D.** University of Nashville, Tenn., 1870; of Paris, Ark.; a member of the American Medical Association and president of the Logan County (Ark.) Medical Society; first superintendent of the State Sanatorium for Tuberculosis, Booneville; died in a hospital at Rochester, Minn., March 26, three weeks after a surgical operation, aged 69.

**William Greenshields, M.D.** Glasgow, 1859, L. & F. P. & S., Glasgow; a pioneer practitioner of Romeo, Mich.; formerly a member of the American Medical Association; died at his home, about March 29, aged 76.

**Richard Pearce Francis, M.D.** Harvard Medical School, 1888; a member of the American Medical Association; head of the Mountainside Hospital, Montclair, N. J., and for many years a member of the Montclair Board of Health; was injured in a collision between his automobile and another machine, March 29, and died a few hours later in Mountainside Hospital, aged 51.

**Ira Thompson Van Gieson, M.D.** College of Physicians and Surgeons, New York City, 1885; a bacteriologist in the research laboratory in the New York Department of Health; from 1896 to 1901 director in the State Pathologic Institute, Ward's Island; died in Bellevue Hospital, New York City, March 24, from myocarditis, aged 47.

**James W. Norris, M.D.** Starling Medical College, Columbus, O., 1896; formerly a member of the Ohio State Medical Association; for several years president of the Monroe County Medical Society; vice-president of the First National Bank of Woodsfield, O.; died at his home in that place, March 18, from tuberculosis, aged 43.

**Josiah Hasbrouck, M.D.** Albany (N. Y.) Medical College, 1885; since 1886 a practitioner of Port Ewen, N. Y.; sheriff of Ulster County from 1901 to 1903; formerly president of the Ulster County Medical Society; town supervisor in 1895; died in the Astor Sanitarium, New York City, March 25, from diabetes, aged 48.

**Joseph W. McBride, M.D.** Memphis Hospital Medical College, 1896; formerly a member of the American Medical Association; a member of the Tennessee State Medical Association and of the Board of Education of Covington; died in St. Joseph's Hospital, Memphis, March 26, after a surgical operation, aged 45.

**Harry Raymond Bennett, M.D.** Dartmouth Medical School, Hanover, N. H., 1897; of Bridgeport, Conn.; relief doctor at the Emergency Hospital, Bridgeport; for one term a member of the board of aldermen; died in St. Vincent's Hospital, Bridgeport, March 22, from pneumonia, aged 38.

**James Strong Cameron, M.D.** University of California, San Francisco, 1868; a member of the American Medical Association; a Confederate veteran and since the close of the Civil War a practitioner of Red Bluff, Cal.; died at his home, March 24, from heart disease, aged 70.

**Nannie May Latimer, M.D.** Western Pennsylvania Medical College, Pittsburgh, 1908; a member of the American Medical Association; formerly of Tarentum, Pa.; a missionary of the Presbyterian Board in Lien Chow, China; died in that place, March 15, aged 34.

**Benjamin Van Etten Dolph, M.D.** Syracuse (N. Y.) University, 1899; of Sodus, N. Y.; later a resident of Colorado on account of ill health, and electrician of the New York State Railway; died in Myers Hospital, Sodus, March 26, from nephritis, aged 38.

**Algernon S. Barnes, M.D.** University of Missouri, Columbia, 1855; formerly dean of the St. Louis College of Physicians and Surgeons and a member of the Missouri State Medical Association; died at his home in St. Louis, March 30, from arteriosclerosis, aged 82.

**Stradford Straus Dupee, M.D.** Howard University, Washington, D. C., 1898; a colored practitioner of Evansville, Ind.; died in the Crescent Sanitarium in that city, March 30, from embolism of the inferior mesenteric artery, complicated with appendicitis, aged 41.

**Richard Love Johnson, M.D.** Medical College of the State of South Carolina, Charleston, 1861; a member of the South Carolina State Medical Association; local surgeon of the Frisco system at Rolla, Mo.; died at his home, about March 11, aged 71.

**Warren F. Reed, M.D.** University of Michigan, Ann Arbor, 1866; a member of the Ohio State Medical Association; president of the bank of Ottawa; a pioneer practitioner of Putnam County; died at his home in Ottawa, March 29, from acute gastritis, aged 73.

**Williamson C. Pace, M.D.** Washington University, St. Louis, 1854; a surgeon during the Civil War and a practitioner of Ashley, Ill., for half a century; died at the home of T. H. Benton in that place, March 25, from cerebral hemorrhage, aged 82.

**Frank Hamilton Peltier, M.D.** New York University, New York City, 1887; at one time a member of the Medical Corps of the First Infantry, N. G., Conn.; was found dead in his apartment in Hartford, March 21, from heart disease, aged 48.

**Joseph L. Kitchen, M.D.** Northwestern University Medical School, Chicago, 1869; a veteran of the Civil War; formerly a practitioner of Wyanet, Ill., and Sentinel Butte, N. D.; died at his home in Harvey, Ill., March 20, from nephritis, aged 69.

**Chester E. Kleven, M.D.** Wisconsin College of Physicians and Surgeons, Milwaukee, 1912; a veteran of the Spanish-American war, with service in Cuba; died at his home in Lodi, Wis., March 21, from tuberculosis, aged 28.

**Lewis Hayward Hazeltine, M.D.** Medical College of Ohio, Cincinnati, 1865; assistant surgeon of the Eighth Ohio Volunteer Cavalry during the Civil War; died at his home in Clarksville, Mich., March 18, aged 75.

**Grant Stanley, M.D.** Cornell University, New York City, 1904; a member of the American Medical Association; of Sea Cliff, L. I.; died in the Seney Hospital, Brooklyn, March 25, from diphtheria, aged 38.

**Luther Jacob Saeger, M.D.** University of Pennsylvania, Philadelphia, 1899; a member of the American Medical Association; died at his home in Allentown, March 24, from disease of the lungs, aged 35.

**Samuel Richmond, M.D.** Medical College of Virginia, Richmond, 1912; an intern in the Atlantic City (N. J.) Hospital; died at the home of his father in Passaic, N. J., March 31, from heart disease, aged 24.

**John J. Brady, M.D.** Detroit (Mich.) College of Medicine, 1897; formerly city physician of Jackson, Mich., and for two years coroner of Jackson County; died in Marshall, Mich., March 22, aged 39.

**Thomas Henry McCarthy, M.D.** Rush Medical College, 1901; a member of the American Medical Association; died suddenly at his home in Madison, Wis., March 30, from cerebral hemorrhage, aged 37.

**Mayberry S. Reber, M.D.** University of Pennsylvania, Philadelphia, 1863; until 1897 a practitioner of Shoemakersville, Pa., and later a resident of Reading; died at his home, March 26, aged 75.

**Clarence Brock Goddard, M.D.** Denver and Gross College of Medicine, Denver, 1901; a member of the Kansas Medical Society; died at the home of his parents in Leavenworth, March 30, aged 32.

**Samuel John Power, M.D.** University of Michigan, Ann Arbor, 1882; at one time small-pox physician of Evansville, Ind.; died in the Lottie Hotel in that place, March 23, aged 52.

**Frederic A. Mickel, M.D.** University of Arkansas, Little Rock, 1893; of Van Buren; died in a hospital in Fort Smith, March 16, a few days after a surgical operation, aged 62.

**Jane Elizabeth Bigelow, M.D.** Johns Hopkins Medical School, Baltimore, 1912; of Terre Haute, Ind.; died in a hospital in New York City, March 11, from scarlet fever, aged 25.

**James Tucker Cutler, M.D.** Harvard Medical School, 1894; Boston University School of Medicine, 1894; died at his home in Roxbury, Boston, about March 28, from pneumonia.

**Charles E. Bennett, M.D.** Hospital Medical College, Eclectic, Atlanta, Ga., 1910; of Pensacola, Fla.; died at his old home in Owensboro, Ky., March 21, from nephritis, aged 44.

**Richard E. Martin, M.D.** Washington University, St. Louis, 1873; a member of the American Medical Association; died at his home in Bonham, Tex., March 21, aged 63.

**William H. Wise, M.D.** Toledo (O.) Medical College, 1885; a member of the State Medical Association of Texas; died at his home in Alvin, Tex., March 30, aged 59.

**Joshua Monroe Shaffer, M.D.** College of Physicians and Surgeons, Keokuk, Ia., 1857; died at his home in Keokuk, March 9, from cerebral hemorrhage, aged 82.

**Frank Warren Chamberlin, M.D.** College of Physicians and Surgeons, New York City, 1892; died at his home in New York, March 29, from heart disease, aged 52.

**Charles B. W. Cox** (license, Nebraska, 1891); one of the earliest settlers of Blaine County; died recently at his home in Brewster, aged 60.

**James A. Conaway** (license, Maryland), for many years a practitioner of Dorchester County; died at his home in Hoopersville, March 19.

**Jovite A. LaPointe** (license, Maine, act of 1895); for thirty-five years a practitioner of Biddeford; died at his home, March 23, aged 69.

**Jesse D. Burke** (license, Michigan, 13 years of practice, 1900); died at his home in Detroit, March 15, from pneumonia, aged 76.

**Francis X. Spranger, Jr., M.D.** Pulte Medical College, Cincinnati, 1890; of Detroit; died in Milan, Italy, February 17, aged 44.

**Edwin Folsom** (license, N. Dak., 1907); a veteran of the Civil War; died at his home in Fargo, March 21, aged 71.

# The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

## AGAIN, ANTIKAMNIA

In season and out of season, THE JOURNAL has exposed the Antikamnia fraud until it would seem that its readers would become weary of the very name. There is nothing new to say about this dangerous stuff, and yet the number of inquiries indicates that thousands of THE JOURNAL'S readers do not know of the previous exposures. More than fifteen years ago THE JOURNAL ceased carrying the Antikamnia advertisement; more than ten years ago it notified its readers that the nostrum was being advertised to the public by means of circular letters; more than six years ago it proved that, when the Food and Drugs Act went into effect, acetphenetidin had been substituted for acetanilid in Antikamnia evidently in order that the presence of the older drug, of whose dangers the public had been made aware might not have to be admitted; more than five years ago THE JOURNAL showed that the Antikamnia sold in the British Isles still contained acetanilid, and as late as last October it verified this statement although threatened with prosecution for libel by the Antikamnia Chemical Company.

Yet, in spite of all these exposures, not a week passes that we do not receive one or more letters calling attention to the Antikamnia fraud. Most of these letters deal with one, or more, of three points: first, the fact that the stuff is being advertised to the public by means of circular letters and that sample "vest-pocket boxes" of this dangerous drug are being sent through the mail to laymen; second, that Antikamnia is being advertised in newspapers, and, third, that in the booklets sent out by the Antikamnia Chemical Company both to the medical profession and to the public, a paragraph is

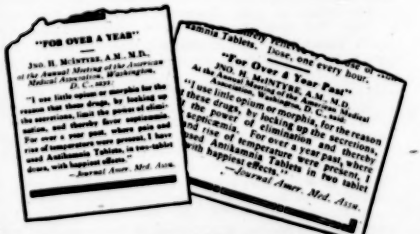


Fig. 1.—Reproductions of portions of pages in the booklets sent out by the Antikamnia Chemical Company to physicians (on the right), and laymen (on the left), respectively. Those who do not realize the character of the Antikamnia concern naturally imagine that the quotation here given from THE JOURNAL is a comparatively recent one. Notice that no dates are given. As a matter of fact, it is twenty-two years old. Dr. McIntyre, who wrote it, has been dead eleven years.

quoted from an article by Dr. John H. McIntyre that appeared in THE JOURNAL.

The first two points have already been discussed so frequently that it seems hardly worth while to take them up again in detail, though it might be said that the medical profession has at last become so familiar with this wide-spread humbug that the Antikamnia Chemical Company has finally gone over body and soul to the newspapers. So far as we can learn only three publications professing to be medical journals still carry the Antikamnia advertisement. These three are:

*Southern Practitioner* — *Pacific Medical Journal*
*Therapeutic Record*

As is usual in such cases, the British medical journals are not so particular, and we still find Antikamnia advertised in:

*Medical Press and Circular* — *Lancet*
*Glasgow Medical Journal* — *Canada Lancet*
*Journal Tropical Medicine and Hygiene* — *Practitioner*
*Dublin Journal Medical Science*

The reproduction of the McIntyre quotation is evidently adopted by the Antikamnia concern as a means of "playing even" with THE JOURNAL for the unpleasant things it has said about it. In quoting Dr. McIntyre, the Antikamnia Chemical Company carefully avoids giving the date on which the article appeared. As a matter of fact, the article was printed in THE JOURNAL over twenty years ago (July 4, 1891), and Dr.

Fig. 2.—Photographic reproductions of two typical Antikamnia advertisements now appearing in newspapers all over the country. These tablets are advertised in various newspapers as being "safe" and neither "depressant' nor "habit-forming"—three separate and distinct falsehoods.

McIntyre himself has been dead for eleven years. Presumably, however, the Antikamnia Chemical Company will continue to mislead, either directly or by inference, until the end of the chapter.

## SOME PRESUMABLY SAFE FLOURS AND FOODS FOR DIABETICS

The article on "Flours and Foods for Diabetics" that appeared in THE JOURNAL, March 22, has brought a large number of inquiries, requesting the names of products containing low percentages of carbohydrates. The chemical laboratory of the Association is at present examining several products of this kind, and as soon as the investigations are completed, the results will be published in THE JOURNAL. In the meantime the following list is given tentatively. The figures represent the claims made by the manufacturers for their products; THE JOURNAL cannot stand sponsor for these figures but we believe that the figures are substantially correct:

*Herman Backer, Somerville, Mass.*
Gluten Food, A.....2 per cent. carbohydrates
Gluten Food, B.....5 to 7 per cent. carbohydrates
Gluten Food, C.....9 to 12 per cent. carbohydrates

*Thomas Leeming & Co., 99 Chambers Street, New York.*
Casoid Flour, N. N. R. (an albuminous, not a gluten flour).....carbohydrate-free
Casoid Crackers No. 1.....2.88 per cent. carbohydrates
Casoid Crackers No. 2.....carbohydrate-free
Casoid Crackers No. 3.....4.22 per cent. carbohydrates

*Health Food Company, 25 Lexington Avenue, New York.*
Proto Puff No. 1.....6.71 per cent. carbohydrates
Almond Flour (meal).....7.85 per cent. carbohydrates

*Huntley & Palmer.*
Akoll Biscuit, said to contain "traces" of carbohydrates.

*Kellogg Food Company, Battle Creek, Mich.*
80 per cent. Gluten Flour....7 to 10 per cent. carbohydrates

As has been said, we cannot vouch at present for any of these figures except those of Casoid Flour. This product has already been subjected to analysis, passed on by the Council on Pharmacy and Chemistry and is now in New and Nonofficial Remedies. We hope, however, in the near future to be able to give the results of the examination of the Association's chemists.

# Correspondence

## Articles Published by Dr. F. F. Friedmann

*To the Editor:*—Although the medical profession of this country may not be favorably impressed to-day with the claims made by Friedmann, and although he has not definitely announced whether the substance he is now using is the same as the culture employed in his earlier experiments or derived from it, yet it is of interest to review briefly his original articles.

The first publications by Friedmann concerning this subject appeared in the year 1903 and were four in number, the earliest entitled "Spontaneous Pulmonary Tuberculosis with Large Cavity in a Turtle (Chelone Corticata)" (Spontane Lungentuberkulose mit grosser Kaverne bei einer Wasserschildkröte [Chelone corticata], *Deutsch. med. Wchnschr.*, Jan. 8, 1903). In this article Friedmann states that except for an occasional dubious report there had previously been no description of an authentic case of spontaneous tuberculosis of the lungs in a cold-blooded animal. The case he reports, which he asserts was the first of the kind to be reported, occurred in a turtle which died in the Berlin Aquarium and was examined post mortem. The lungs were later sent to Friedmann and showed many tubercles, caseous foci and cavity formation. Microscopic preparations stained in the usual way showed all stages of the tuberculous process and incredible masses of acid-fast bacilli which could in no way be distinguished from the mammalian type of organism.

The second article appeared shortly after, under much the same title (Spontane Lungentuberkulose bei Schildkröten und die Stellung des Tuberkelbazillus im System, *Ztschr. f. Tuberk.*, iv, No. 5.) Here the findings are more fully described, and the necropsy report of a second turtle with similar lesions is given. In addition there is a careful history of the study of tubercle bacilli in cold-blooded animals with a long list of references.

The third article (Der Schildkrötentuberkelbazillus, seine Züchtung, Biologie und Pathogenität, *Centralbl. f. Bakt.*, 1903, xxxiv), concerns Friedmann's studies of the organism obtained from the turtle and deals with the cultural characteristics and pathogenicity of the strain. Cultivation was readily performed and the optimal temperature was found to be 37 C. (98.6 F.). The results of about fifty animal inoculations are quoted; all the cold-blooded animals, except two, died, whereas none of the warm-blooded series was affected except the guinea-pigs, which were killed by enormous doses, but were unaffected by smaller amounts. As a result of these studies Friedmann concluded that the turtle bacillus was a much nearer relative of the human and bovine strains than any of the various other cold-blooded strains, or even the avian bacillus of Koch.

The title of the fourth article, "Immunization Against Tuberculosis" (Immunisierung gegen Tuberkulose, *Deutsch. med. Wchnschr.*, December, 1903, abstr. THE JOURNAL, Jan. 9, 1904, p. 136), shows the trend of Friedmann's investigations, and his succeeding articles all concern this subject. After a preface about immunity in general, he describes his discoveries and studies of the turtle bacillus, and asserts that it is especially suited for producing immunity. The culture is described as follows: 1. Optimal growth occurs at 37 C. 2. The culture is indistinguishable at that temperature from the human strain. 3. It produces in the guinea-pig a specific tuberculosis at the site of injection but localized and going on to healing. In a series of the smaller animals injected, none suffered any ill effects, and they reacted very differently from uninjected controls when injected later with lethal doses of human bacilli. The controls died in from four to six weeks from generalized tuberculosis, whereas the immunized animals showed at the site of the injection of the human bacilli an infiltration which, however, remained soft, later discharged a little caseous matter and healed up entirely. These animals sometimes showed a slight swelling of the regional lymph-nodes, but they lost no weight, suffered no impairment of general health, and at autopsy, three months later, showed no evidence of tuberculosis. On the basis of these results Friedmann held that the turtle bacillus was a harmless, immunity-conferring substance.

During the following year, 1904, Friedmann published three articles all on more or less the same lines. The first (Zur Frage der aktiven Immunisierung gegen Tuberkulose, *Deutsch. med. Wchnschr.*, January, 1904), is apparently in response to certain critics who had compared his attempts to produce immunity with those of experimenters working with strains of tubercle bacilli attenuated in virulence by residence in some cold-blooded animal, as that of Moeller which was injected into a blindworm and later recovered for use. Friedmann maintained that his theory and technic were more scientific, and his results more successful. The other two types of tubercle bacilli strains used in attempts to produce immunity had been, first, those strains which occur apparently as harmless saprophytes in many cold-blooded animals, such as the fish bacillus of Bataillon, Dubard and Terre; and second, the bacilli, variously modified, by passage through a cold-blooded animal, as Moeller's through the blindworm, and Bataillon, Lubarsch and Dieudonné's through the frog.

The next article (Ueber Immunisierung von Rindern gegen Tuberculose [Perlsucht] und über Tuberculose-Serumversuche, *Deutsch. med. Wchnschr.*, 1904, xxx), concerned the use of the culture for immunizing cattle; in this it is stated that the turtle-bacillus is completely harmless for young or old cattle, and that by the use of proper technic a very high grade of immunity can be produced through a single injection. The third article appearing in 1904 (Ueber Immunisierung gegen Tuberkulose, *Therap. Monatsch.*, 1904, xviii), takes up no new points and merely covers the same ground.

In 1905 Friedmann published one article (Zur Tuberculose-immunisierung mit Schildkrötentuberkelbazillen, *Deutsch. med. Wchnschr.*, Feb. 2, 1905), in response to a criticism by Libbertz and Ruppel in the same number of the same journal. These authors had investigated Friedmann's culture and had concluded (1) that it was not absolutely harmless to warm-blooded animals; (2) that intravenous injections of Friedmann's culture did not in warm-blooded animals prevent a later infection with tuberculosis, and (3) that tuberculous immune bodies were not produced by its injection. Friedmann accuses these authors of unfairness since they were familiar with his work and saw his manuscripts, but withheld all comment until after publication. He denies all their conclusions and reiterates his own results.

From 1905, for seven years Friedmann's name does not appear in the *Index Medicus*, and no reference to any publication by him is found until 1912, when his well-known article appeared in the *Berliner klinische Wochenschrift*. From the statements made in this article and from the figures quoted it seems probable that the culture formerly employed and only meagerly described in the articles which I have abstracted is the same as the one Friedmann is now injecting, or that it is at least the basis for the present preparations.

O. H. PERRY PEPPER, M.D., Philadelphia.

## Inoculability of Cancer—A Question of Priority

*To the Editor:*—An interesting editorial note (The Limitations of Specificity in the Transmission of Disease, THE JOURNAL, March 1, p. 675), on the inoculability of cancer in different species of animals, gives the impression that those observations and experiments are only recent in time. In the good name of American science, I refer you to the Proceedings of the Academy of Natural Science, Philadelphia, May and June, 1851, in which the late Joseph Leidy repeats the results of his experiments on the inoculability of cancer. The experiments were conducted at the Academy of Science, and from the results obtained by introducing portions of (human) cancerous tissue into frogs, Leidy observed after a full description and demonstration before the academy, that "the experiments not only proved the independent vitality of tissues, which was generally admitted, but rendered it exceedingly probable that cancer was

inoculable, for as, in the experiments the cancerous fragments continued to live when introduced into cold-blooded animals, they would probably not only continue to live when introduced into warm-blooded animals but would grow or increase in size." These experiments were undertaken in connection with a series of others on the transplantation of animal tissues.

JOSEPH LEIDY, M.D., Philadelphia.

### Prophylactic Measures Against Typhoid in Flood Area First Taken by the Red Cross

*To the Editor:*—In your editorial, "President Wilson Rises to an Emergency" (THE JOURNAL, April 5, 1913, p. 1079), you mention the fact that the federal authorities sent a quantity of antityphoid serum into the flooded districts in Ohio. While this is true, the first actual prophylactic measures against typhoid were taken at the request of the Cincinnati Chapter of the Red Cross, of which I was the temporary medical director.

The serum was made in the laboratories of the Cincinnati Hospital by Prof. W. H. Wherry and his assistants, and was first administered at Miamisburg by Dr. W. Lucas, and at Hamilton by Major F. Hendley of the Ohio National Guard Hospital Corps. In all about 1,600 doses were sent out by this organization, with the necessary instructions as to the proper use and after-treatment, and with orders to make the needed clinical notes for future use.

HERBERT A. BROWN, M.D., Cincinnati.

### A Misleading Advertisement

*To the Editor:*—In various newspapers in this country there is now being published an advertisement which to the careless reader makes it appear that I approve of a certain proprietary preparation. To those who know me it is needless to say that this is without my knowledge or consent. I have placed the matter in the hands of my lawyer, and will see what can be done to stop it.

V. C. VAUGHAN, M.D., Ann Arbor, Mich.

## Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### HOW TO GIVE CASTOR OIL—LAXOL NOT APPROVED

*To the Editor:*—Enclosed is a circular on Laxol. 1. Would you advise me to use it? 2. If not, kindly give a method by which castor oil can be made less distasteful to children.

C. ULYSSES MOORE, M.D., Carthage, S. D.

ANSWER.—1. No. You do not know the composition of Laxol, nor do we. We have no means of knowing whether or not the claims made for it are truthful. In general, short catchy titles for well-known remedies are objectionable. In the case of Laxol, confusion with the poisonous Lysol has caused death (THE JOURNAL, Nov. 23, 1912, p. 1895).

2. Methods by which unpalatable remedies can be given with the least discomfort should be known to every physician.

Castor oil is disagreeable to some persons largely because of its oily character, to others because of the disagreeable taste peculiar to it. When the stomach rejects castor oil it is often because of the taste left in the mouth, or because of the psychic impression which attends the taking of the dose. The simplest method of taking castor oil is to take some steps to prevent the oil from coating the mouth and then to swallow it quickly. Simple methods for this purpose are as follows:

Prepare two warmed cups, one about half full and one about one-quarter full of a hot liquid, such as milk or coffee, and place the dose of oil on the surface of the smaller portion. Wet the mouth with the liquid from the half cup and then quickly drink all the contents of the other cup, finally drinking more from the first cup. Heating the mouth in this way prevents the oil from clinging to it except very slightly, and that little is promptly washed off. Care should be taken, of course, by sampling in advance, to see that the fluid is about as hot as can be drunk quickly and yet not hot enough to burn.

A more simple method can be used if it will suffice. Heat the oil and administer the dose in a tablespoon heated by being dipped in hot water. Then rinse the mouth with hot water, hot milk or other liquid.

There are more complicated methods, including the giving of castor oil in effervescent drinks at soda fountains, the oil floating between the foam and the watery liquid, or it may be prescribed in the form of an emulsion. Such an emulsion is official in the National Formulary as "Emulsum Olei Ricini." The composition of this preparation is as follows:

| | | gm. or c.c. | |
|---|---|---|---|
| ℞ | Castor oil | 30 | ʒ i |
| | Acacia in fine powder | 8 | ʒ ii |
| | Tincture of vanilla | 2 \| 50 | ♏ xl |
| | Syrup (U. S. P.) | 20 | ʒ vi |
| | Water, a sufficient quantity to make | 100 | ʒ iiiss |

The other source of unpalatableness is the disagreeable taste peculiar to castor oil. This is overcome by the use of saccharin (benzosulphinidum, U. S. P.), vanillin, aromatic oils, etc. The following formulas may be used:

| | | gm. or c.c. | |
|---|---|---|---|
| ℞ | Compound tincture of cardamom | 8 | ʒ ii |
| | Cinnamon water | 20 | ʒ vi |
| | Castor oil | 30 | ʒ i |
| | Brandy | 0 \| 30 | ♏ v |

Mix the first two ingredients in a glass, carefully add the oil and drop the brandy on the surface of the oil. This mixture is for immediate use.

Other formulas are:

| | | gm. or c.c. | |
|---|---|---|---|
| ℞ | Saccharin | 0 \| 06 | gr. i |
| | Oil of cinnamon | 0 \| 15 | ♏ ii |
| | Vanillin | 0 \| 13 | gr. ii |
| | Alcohol | 4 | ʒ i |
| | Castor oil | 90 | ʒ iii |

Dissolve the oil of cinnamon, saccharin and vanillin in the alcohol, add the castor oil and mix thoroughly.

| | | gm. or c.c. | |
|---|---|---|---|
| ℞ | Castor oil | 30 | ʒ i |
| | Glycerin | 30 | ʒ i |
| | Peppermint oil | 0 \| 15 | ♏ ii |

### TREATMENT FOR WHIPWORM

*To the Editor:*—Examination of feces for uncinaria ova has developed the fact that my patients are, many of them, heavily infested with *Trichuris trichiura* (whipworm) which, from the literature available, I had thought a rather rare and from a clinical standpoint unimportant parasite. From personal observation I am inclined to reject the theory of its unimportance. Could you publish formulas for anthelmintics to be used against this worm, also references to literature on the subject of intestinal parasitology?

H. C. BEVINS, M.D., Thomas, Ky.

ANSWER.—Recent investigations have shown that the pathogenic rôle of *Trichocephalus dispar* (whipworm) is more extensive than is represented in most text-books. It has been shown to cause enteritis, diarrhea, anemia, etc.

The treatment is said to be unsatisfactory, as the ordinary anthelmintics seem to have no effect. Thymol and male-fern are recommended. An emulsion of benzin may be given by enema, benzin 4:1,000 or 1 fluidram to a quart of water. A strong infusion of quassia has also been recommended.

The subject of intestinal parasites is too extensive to permit us to give an exhaustive list of references here. The following are recent publications on trichocephalus:


Wade, B. N.: A Case of Enteritis from Trichocephalus Dispar, THE JOURNAL, March 11, 1911, p. 743.

Code, A. and Garin, C.: Six Cases of Trichocephalus Dispar Enteritis, *Arch. mal. Appp. digestif*, June, 1910; abstr. in THE JOURNAL, Aug. 13, 1910, p. 628.

Stschebak, A.: The Rôle of the Trichocephalus in Pathology, *Rev. de méd.*, August, 1910; abstr. in THE JOURNAL, Oct. 8, 1910, p. 1328.

Cecil and Bulkley: Lesions Produced in the Appendix by Oxyuris Vermicularis and Trichocephalus Trichiura, *Jour. Exper. Med.*, March, 1912.

Carletti, M. V.: Occult Blood in Stools with Trichocephalus, *Gazz. d. osp.*, April 24, 1910.

Gage, J. G.: Amebic Enteritis with Uncinaria, Trichocephalus and Trichomonads: Result of Treatment After Four Years, *New York Med. Jour.*, December, 1909.

Musgrave, W. E.: Trichocephaliasis, *Philippine Jour. Sci.*, December, 1908.

Stiles and Garrison: A Statistical Study of the Prevalence of Intestinal Worms in Man, *Hygienic Laboratory Bulletin* No. 28, U. S. Public Health Service.

### ARTICLES ON THE METHOD FOR PREPARING IODIZED CATGUT

*To the Editor:*—Please inform me as to the following:
1. What is the technic for preparing iodized catgut?
2. Will the catgut deteriorate if kept in the iodin solution?
3. Does boiling of plain catgut injure its consistency and strength? W. S. N.

ANSWER.—1. Following is a list of articles describing the method for preparing iodized catgut:

Johnson, F. W.: I. K. I. Method of Sterilizing Catgut, *Boston Med. and Surg. Jour.*, Feb. 9, 1905; abstr., THE JOURNAL, Feb. 25, 1905, p. 657.
Naucrede, C. B.; Waldron, F. R., and Tenney, C. F.: *Jour. Mich. State Med. Soc.*, November, 1905; abstr., THE JOURNAL, Dec. 16, 1905, p. 1906.
Bartlett, W.: A Simplified Heat Method of Sterilizing and Storing Catgut, THE JOURNAL, April 21, 1906, p. 1168.
Queries and Minor Notes Department, THE JOURNAL, Oct. 16, 1909, p. 1312, and Sept. 1, 1906, p. 703.
Riddell, J. S.: Iodin Spirit Catgut, *Brit. Med. Jour.*, April 6, 1907.
Steward, F. J.: Formalin-Iodin Catgut, *Brit. Med. Jour.*, Oct. 2, 1909; abstr., THE JOURNAL, Oct. 30, 1909, p. 1516.

2. It is stated that catgut keeps indefinitely in the iodin solution.
3. Yes.

### "MAYR'S WONDERFUL STOMACH REMEDY"

*To the Editor:*—Please let me know the contents of "Mayr's Wonderful Stomach Remedy" manufactured by George H. Mayr, 154 Whiting Street, Chicago. Some of my patients have asked me about it. Some say it causes gall-stones to pass, etc.
T. E. T., Texas.

ANSWER.—"Mayr's Wonderful Stomach Remedy" closely resembles "Fruitola" in its general composition and workings. Both consist of bland oil and cathartic salts. Our chemists found "Fruitola" to be essentially olive oil and the well-known Seidlitz powders. Mayr's "wonderful remedy" proved to be essentially olive oil and Rochelle salts. Large doses of bland oil followed by salts cause the passage of greenish soapy concretions which the credulous are led to believe to be gall-stones.

For detailed reports of these frauds, see THE JOURNAL, Sept. 24, 1910, p. 1128; Aug. 9, 1911, p. 671; March 29, 1913, p. 1016; "Nostrums and Quackery" (second edition), pages 479 and 482. This material is also reprinted as a pamphlet (price 4 cents), entitled "Fake Gall-stone Cures."

### ARTICLES ON TRICHINOSIS

*To the Editor:*—Please give me a list of publications that have appeared on the subject of trichinosis. M. M.

ANSWER.—Following is a list of articles on trichinosis which have appeared within the past two years. For further references we would suggest that our correspondent consult the Index to Current Medical Literature, published by the American Medical Association.

Trichinosis, Therapeutics Department, THE JOURNAL, Feb. 4, 1911, p. 348.
Danger of Trichinosis from Pork, correspondence, THE JOURNAL, March 4, 1911, p. 687.
Morgan, W. A.: Trichinosis Developing During the Puerperium, Bulletin of Lying-In Hospital, New York City, March, 1911.
Lamb, A. R.: Embryos of Trichinella Spiralis in Blood of Patients Suffering from Trichiniasis, *Am. Jour. Med. Sc.*, September, 1911.
Runkel, G. H.: An Epidemic of Trichinosis, *California State Jour. Med.*, July, 1912.

### OCCURRENCE OF THE RUSSO REACTION

*To the Editor:*—Please tell me in what diseases and conditions a positive Russo reaction occurs. C. K.

ANSWER.—The test is given in measles, small-pox, chronic and suppurative tuberculosis and in typhoid. It is also positive in a considerable number of normal cases. The Russo reaction was described in THE JOURNAL, Aug. 10, 1912, p. 465.

### INFORMATION ON THE INTERNATIONAL MEDICAL CONGRESS

*To the Editor:*—Where can I learn about the International Medical Congress and who the American secretary is? You have touched on the matter in THE JOURNAL, but I paid no attention to it, as I did not know until very recently that I would be able to get away to go abroad this summer. S. C., Denver.

ANSWER.—The International Medical Congress will meet in London, Aug. 6-12, 1913. The secretary of the American committee is Dr. A. R. Allen, 2013 Spruce Street, Philadelphia. On request he will send information as to the program, the method of registration, etc. THE JOURNAL, Feb. 3, 1912, p. 356, contained a statement from our London correspondent concerning the congress, and in THE JOURNAL, July 27, 1912, p. 285, there is additional information.

A group of American physicians is planning, in connection with this congress, to take a trip through Europe, as announced in THE JOURNAL, Jan. 4, 1913, p. 66. Dr. J. M. Anders, 1605 Walnut Street, Philadelphia, chairman of the newly organized American Society for Physicians' Study Travels, desires to hear from any who wish to join this party.

### LITERATURE ON INFECTIONS OF THE HAND

*To the Editor:*—Please refer me to literature on infections of the hand. A. T. DOWNING, M.D., Littleton, N. H.

ANSWER.—A good book on infections of the hand is by Kanavel. In addition, the following articles may be consulted:

Pellrs, W. H.: Hand Infection Apparently due to Bacillus Fusiformis, *Jour. Infect. Dis.*, June, 1911.
Garner, H. B.: Surgery of Soft Tissues of the Hand, *Detroit Med. Jour.*, September, 1911.
Moschcad, S. W.: Treatment of Infections of Hands and Fingers with Special Reference to Tenosynovitis, *St. Louis Med. Rev.*, October, 1911.
Corner, E. M.: Cellulitis of Hand, *Practitioner*, London, February, 1912.
Hughes, B.: Treatment of Cellulitis with Special Reference to Hand and Arm, *Practitioner*, London, July, 1912.
Cramp, W. C.: New Retractive Drain in Treatment of Small Infected Wounds About the Hand, *Surg., Gynec. and Obst.*, October, 1912.

### ANTACID PROPERTIES OF INSOLUBLE BISMUTH SALTS

*To the Editor:*—I have seen it stated that insoluble bismuth salts act as antacids. Has actual trial been made to determine whether this would occur under conditions similar to those of the alimentary canal? S. T.

ANSWER.—To answer this query a 50 c.c. portion of approximately 0.2 per cent. hydrochloric acid solution was mixed with 1 gm. of bismuth subcarbonate, and another with bismuth subnitrate. Both were shaken occasionally for an hour. Titration at the end of this time showed that the subcarbonate had neutralized about half of the acid, and the subnitrate only about one-tenth. The subcarbonate may therefore be considered a fair, though slowly acting, antacid, but the subnitrate has practically no effect on acidity.

## POSTGRADUATE STUDY ABROAD

Many physicians are asking from week to week for information regarding graduate study in the various medical centers of Europe. We discussed this subject at length April 8, 1911, in an article which has been of service to an immense number of physicians. During the subsequent period we have occasionally added information on the subject, and we now gather all this material in a new article. The portions referring to the various cities abroad have been prepared by THE JOURNAL'S representatives in those cities. The length of this article has caused us to omit about half of it from THE JOURNAL. The omitted portions include details as to cost of courses and of living and references to various additional sources of information. We reprint it in full in pamphlet form, a copy of which will be sent to any one on receipt of 10 cents.

We caution our readers that the space here devoted to the subject does not indicate that the opportunities for study abroad are always or even generally superior to those in this country. In gynecology and general surgery, for instance, we believe that the advantages afforded by American clinics are far less expensive than those abroad and more valuable as well. That, however, is another story. The present article is to aid those who have decided to go abroad.

Although some foreign teachers speak English fluently and even conduct classes in that language, it is not, as a rule, well to go to Vienna, Berlin, Düsseldorf or any other German-speaking center without a serviceable knowledge of German, or to Paris without an equally good knowledge of French. It is likewise important that before setting out the physician should have a clear idea of what he wishes to obtain and where he should go for it. As we have remarked before, unless he seeks merely the prestige of having studied abroad, what he brings back from foreign study is in direct proportion to what he took abroad with him.

Information in regard to the opportunities for postgraduate study in various parts of the world may be obtained from the Medical Inquiry Office at the Kaiserin Friedrich-Haus, Berlin NW 6, Luisenplatz 2-4. Further information is easily

obtained after a physician arrives at his destination, as there are information bureaus in the different cities. A list of members of the Continental Anglo-American Medical Society may be obtained from the honorary secretary and treasurer, Dr. Robert Turaer, 42 Rue de Villejust, Paris. This society was organized to serve as a bond of union between British and American practitioners established on the Continent and in Northern Africa, and will afford an opportunity to meet English-speaking confrères. A reference book and guide which physicians intending to go abroad, particularly to Germany, will find useful to consult is J. H. Honan's "Handbook to Medical Europe," published by P. Blakiston's Son & Co., price $1.50.

Some of the smaller university cities abroad offer excellent opportunities for laboratory work, but for clinical instruction, which is what the American physician going abroad for postgraduate work usually desires, the best opportunities are found in the larger medical centers, and Vienna, Munich, Berlin, Paris and London are the cities usually selected. Vienna in particular has long provided exceptionally well-arranged facilities for brief postgraduate courses, some in English, and many arranged with special reference to the needs of American visitors.

### LONDON

Postgraduate teaching in London has one fundamental difficulty. The enormous wealth of clinical material is scattered and divided among a large number of independent medical schools and hospitals. There are twelve large general hospitals which are also medical schools with a complete staff of lecturers, at which the whole medical curriculum is provided for medical students. There are also about the same number of general hospitals which have not a medical school for students attached to them, and a great number of special hospitals—seven for diseases of the chest, eight for children, eight for women, five for diseases of the eye, five for diseases of the ear, nose and throat, two for diseases of the rectum, one orthopedic, three for nervous diseases, four for diseases of the skin and one for venereal diseases. To the system of maintenance by voluntary subscriptions is due the multiplication of institutions independently doing the same work. The centralization due to government control, which exists on the Continent, is wanting. Excepting the National Hospital for the Paralyzed and Epileptic, Queen Square, Bloomsbury, W. C., which may be described as the home of British neurology, and the Royal London Ophthalmic Hospital (formerly Moorfield's Eye Hospital), City Road, E. C., there are no institutions which stand out preeminently as the national center for the teaching of some particular subject; the honor is divided among a number.

Until recently all the systematic teaching provided in London was for medical undergraduate students. Physicians from home or abroad wishing to improve their knowledge simply attended the hospitals in an informal manner, perhaps bringing a letter of introduction to some distinguished teacher. In 1898 the London Post-Graduate Association was founded with the object of encouraging postgraduate study by organizing courses at some of the hospitals. Cards are issued to physicians (British, colonial and foreign) which admit them to clinical instruction in the wards and outpatient rooms and to attendance at operations and necropsies. They do not entitle the holders to attendance at certain tutorial classes or to certificates of attendance for the purpose of any examination.

The academic year is divided into three sessions of three months each: from January to March, May to July, and October to December. The cards are issued at the following rates: valid for three months, $50; for six months, $75; for any longer period at a further rate of $45 for each additional six months. Holders of cards may obtain extension of their original term by paying the difference at any time before the original term has expired. The cards are issued on personal application between the hours of 10:30 and 1 (except Saturday) at the office of the association, 20 Hanover Square, London, W. Evidence of qualification will be required.

A general time-table of the arrangements at the different hospitals and schools is furnished with the cards. A list of operations, clinical lectures and other arrangements can be had daily at the secretary's office. The arrangements offer the graduate student a large selection of teaching. On every one of the six days of the week he has the choice of a dozen clinics in medicine at Charing Cross, Guy's, King's College, St. George's, St. Mary's, St. Thomas', University College and the Westminster Hospital. In addition he has a selection from clinics devoted to such special subjects as tropical medicine, electricity, Roentgen rays, physical exercises and vaccine treatment. In surgery and also in diseases of women, of children, and of the eye he has a similar daily choice. In diseases of the ear, nose and throat and of the nervous system he has daily choice of three or four clinics. As some clinics begin in the morning and others in the afternoon two can be attended on one day. The ticket also admits to the Polyclinic. There are three clinics each week devoted to the genito-urinary system, and a number of clinical lectures and demonstrations. In connection with the course there are also special postgraduate classes on physiologic psychology, psychiatry, anatomy and physiology of the nervous system, clinical neurology, neuropathology, anesthetics, clinical examination and other subjects for which special fees are charged.

### PARIS

Paris is said to excel in dermatologic, neurologic and genito-urinary work. For work in bacteriology it offers the unequaled facilities of the Institut Pasteur.

#### *Access to Hospitals and Clinics*

In Paris there is no special official organization for medical postgraduate instruction, but any physician, foreign as well as French, may, without the payment of any fee, follow any theoretical course given in the Faculté de médecine or any of the clinical courses held in the hospitals or clinics. Information in regard to courses at the Faculté de médecine is given in notices posted at the entrance; or one may apply at the office of the secretary, which is open daily from 12 till 3. The physician should first introduce himself at the offices of the Assistance Publique, 3 Avenue Victoria. He will receive gratuitously a *carte d'entrée des hôpitaux*, which carries a formal request to the various directors of hospitals, etc., to assist the visitor with information and facilities; it also contains a list of all the hospitals under the jurisdiction of the Assistance Publique. In order to be admitted to the clinical lectures, ward visits and examination of patients, the physician has only to present his card to the concierge of the hospital and to ask by name for the physician or surgeon whom he wishes to see.

#### *Various Centers of Instruction*

A physician who desires to take a practical course and to have the privilege of the library of the Faculté de médecine pays a matriculation fee of about $6 (30 francs), and in addition a fee for each practical course taken up, which is on the average about $10 (50 francs).

In various hospitals, clinics and laboratories there are *cours de perfectionnement* organized at various times of the year, especially during vacation. These are announced by placards posted in the buildings of the Faculté de médecine and the various hospitals and by notices in the medical journals. The fees are variable, but rarely exceed $10 or $20. Two complete courses in dermatology and venereal diseases of a hundred lessons each (two lessons each day) are given at the hôpital Saint-Louis, the first in May, June and July, the second in October, November and December. The fee is $30 (150 francs). These courses cover particularly diagnosis and treatment. At all demonstrations are presented patients, moulages from the hôpital Saint-Louis museum, and microbiologic and histologic specimens. Different therapeutic methods are applied in the presence of the students.

#### *Information Bureau, Etc.*

A free information bureau for physicians and others, officially known as the Bureau de Renseignements Scientifiques, is maintained at the Sorbonne. It is open all the year round from 10 to 12 and from 2 to 5, with attendants able to speak German, English, Russian and Spanish, and catalogued information of all subjects of interest to persons intending to pursue scientific study.

### BERLIN

Medical courses at Berlin are divided into: (1) the regular university courses, which are intended for the undergraduate students; (2) vacation courses given by the university instructors during March and October, and (3) monthly courses by private instructors, which are given the year round. These are mostly policlinic or dispensary courses and correspond closely to the instruction given in graduate schools in the United States.

Regular student courses at the University of Berlin are often designed more for undergraduate than for postgraduate work. An occasional visit to these courses is welcomed without formality. To attend regularly one must sometimes matriculate. The university work is divided into a winter and a summer semester, the winter semester lasting from

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October 15 to March 15 and the summer semester from April 15 to August 15. The time for matriculation is comprised in the two weeks preceding the opening of the semester and the first two weeks of the semester. The matriculation fee is 18 marks; diploma and passport must be shown. Vacation courses are given twice a year (March and October) during the university holidays. These courses are for graduates in medicine and can be highly recommended, but are sometimes overcrowded. Most of these courses begin on the first day or during the first week of the month and last for four weeks. Assistantships or so-called "voluntary" assistantships are often obtainable in outpatient departments and inside the hospitals. The requirements of such positions may best be obtained from the older men in the Anglo-American Medical Association or members of its orientation committee.

### *Anglo-American Medical Association*

The Anglo-American Medical Association of Berlin was formed to promote the interests of British and American physicians studying in that city. The headquarters of the association are at the Hotel Atlas, Friedrichstrasse 105, where an information clerk is in attendance from 9 to 10 a. m. The membership fee is 10 marks (about $2.50) a year. The yearbook of the association will be sent by the secretary on receipt of 5 cents in foreign exchange stamp coupons. It contains courses most frequently attended by Americans, but does not pretend to be a complete list of all courses given in Berlin.

It is imperative that American citizens bring with them passports. They must register in the consulate when arriving in Berlin. If possible it is best to reach Berlin about the twentieth of the month. According to information furnished by the Anglo-American Medical Association, at least one week should be spent in personal examination of the opportunities for study and in getting settled before beginning work.

## VIENNA

Vienna presents many advantages from the medical student's point of view, one of which is the great amount and variety of the clinical material, since patients come to Vienna from territory within a large radius. Another advantage is the centralization of facilities for instruction, which makes it possible for the student to economize his time.

### *Hospitals and Clinics*

There are ten large public hospitals, the chief of which, the Allgemeines Krankenhaus, comprises three clinics each of surgery and medicine, two clinics each for gynecology, dermatology and syphilis, ophthalmology, mental and nervous diseases, and one each for otology, rhinolaryngology and pediatrics. The majority of the teachers not only speak English fluently but give lectures in English in special classes. Within the last few years a magnificent new hospital has been erected a few hundred feet away from the old Allgemeines Krankenhaus, which is to be pulled down. It contains only clinical wards for clinical teaching by ordinary professors. It is lavishly equipped in the most modern and scientific manner and will, when finished, contain 2,600 beds. At present the clinics for gynecology, obstetrics, rhinolaryngology, internal diseases and pediatrics are located there. Besides this general hospital there are the Wiedner Hospital, the Rudolph Hospital and the Poliklinik, connected with the medical department of the university, in which clinical lectures are given also by professors during the semesters, and some smaller hospitals in which specialist classes and practical work may be obtained. The winter semester lasts from October till March 31, the summer semester from May 15 to July 15. The fees for clinical semester lectures are low, about $6 being the maximum, while special lectures are more expensive. A good opportunity for anatomic and dissecting work is offered in the Anatomisches Institut, and for pathologic anatomy and bacteriology in the Pathologisch-Anatomisches Institut. In these official institutes the fees for working and material come to something like $10 to $15 per term of eight weeks. There is also a well-equipped institute for the study of physiology, and one for histology of the nerves. A modern institute for experimental pathology and therapeutic research was opened three years ago. All the institutions mentioned above are in the same quarter or district of Vienna, called Alsergrund, and are conveniently near each other.

Those who wish to spend considerable time in the wards do not find it difficult to obtain the position of *Hospitant* in the wards, where they have the same rights as ordinary hospital officers, but not their duties; they, of course, receive no pay.

Special mention must be made of the dietetic kitchen in the wards of von Noorden's clinic in the new hospital. This is one of the few places in the world where the special requirements of the diet for disturbances of metabolism, its preparing, its caloric value and its contra-indications can be learned by the students in the kitchen itself. Thirty beds are supplied from this kitchen with special kinds of food, as required by the individual cases. Foreign physicians are admitted to the clinic as soon as there is any vacant place.

Those men who desire to get more work in a specialty (eye, ear, nose, throat, urology) have the opportunity of obtaining "working places" in one of the numerous ambulatories of the Krankenkassen or sick clubs, or in the Mariahilfer Ambulatorium or Poliklinik. The "working-place" of Hajek's department (nose and throat) is well known, as are those also in the department of Zuckerkandl (urology), and in Alexander's ear department. It is advisable to obtain information as to vacant places, for there are generally several applicants awaiting their turn. These places cost on an average about $20 a month.

### *Centers of Information*

The American Medical Association of Vienna, Schlösselgasse 28, Vienna VIII, will be glad to assist any newcomer and to give information on study or other subjects. An orientation committee for such purposes is one of the features of the American Medical Association of Vienna.

A bureau of information for medical courses is maintained in the Allgemeines Krankenhaus, First Court, head offices (Direktion), first floor, room 14, where information can be obtained on personal or written application.

## LITERATURE ON STUDY ABROAD AND AIDS ON FOREIGN LANGUAGE

Those who intend to study on the Continent will find it extremely valuable to have command of French or German, according as they mean to go to France or to Germany or Austria. While a working knowledge of a foreign language cannot be obtained without practice in speaking and hearing it, the following manuals may be recommended to those who wish to strengthen the medical side of their vocabularies: The "Medical Vademecum in English and German" by B. Lewis, 1910, sold by P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, for 85, is an ideal means of obtaining a working knowledge of German without the necessity for a dictionary; the postgraduate lectures and talks are given in English and in German on opposite pages. Special attention is given to the conversations needed in conducting the examination of a patient in various pathologic conditions. The sixty lectures are on various subjects and are authentic clinical lectures. "Self-Taught French" by F. Thimm, and similar pamphlets for German, Spanish and Italian, are published by Dick & Fitzgerald, 18 Ann Street, New York, price 25 cents, and are useful for general conversation. "Medical German," by Deutsch, price $1.75, contains conversations with patients in German and English. A volume of German-English medical dialogues, with dictionary and grammar, by Robert Lewin, is published by Dr. Werner Klinkhardt, Leipsic. P. Blaschke's English-German "Medizinisches Konversationsbuch," published by the Verlag von Walther Rothschild, Berlin, is sold in this country for $1.20. Another work of this kind, "Englisch für Mediziner," about the same price, is published by the Verlag von J. A. Barth, Leipsic. "Terminologia Medica Polyglotta," by Theodore Maxwell (London, J. and A. Churchill, price $3), gives synonyms in seven languages. Foster's Medical Dictionary, in eight volumes, published by D. Appleton & Co., New York, price $10, gives medical terms in English, French, German, Latin and Greek. The National Medical Dictionary, in two volumes, edited by Dr. J. S. Billings, published by Lea & Febiger, Philadelphia, 1890, price $14, includes English, French, German, Italian and Latin medical terms in a single alphabetical arrangement.

Following is a list of articles and letters which should prove of interest.

Hall, J. N.: Postgraduate Work in Vienna, THE JOURNAL, Dec. 7, 1907, p. 1932.
Osler, William: Vienna After Thirty-Four Years, THE JOURNAL, May 9, 1908, p. 1523; Impressions of Paris, THE JOURNAL, Feb. 27, 1909, p. 701; March 6, 1909, p. 771.
Davis, A. Edward: Postgraduate Medical Instruction in Vienna, *Jour. Ophth. and Oto-Laryngol.*, April, 1909, p. 127.
Mannheimer, G.: Postgraduate Study in Europe, *Med. Rec.*, May 8, 1909.
Dewey, Richard: Psychiatry in Munich, THE JOURNAL, Jan. 1, 1910, p. 65.
Macy, Mary S.: Postgraduate Medical Work for Women in Europe, *Woman's Med. Jour.*, March, 1910, p. 59.
Kast, L.: The International Committee for Postgraduate Medical Education, *Post-Graduate*, June, 1910, p. 632.
Slocum, George: The American Medical Student in Vienna, *Phys. and Surg.*, July, 1910, p. 262.
Richardson, F. H.: Postgraduate Study of Pediatrics in Vienna, THE JOURNAL, Oct. 8, 1910, p. 1303.

Kutner, R.: Postgraduate Medical Instruction, Its Present Status and Future Objects. *Post-Graduate*, March, 1910.
McMorrow, F.: Postgraduate Work for Americans at Budapest, THE JOURNAL, July 29, 1911, p. 407; Postgraduate Work in Vienna and Budapest, *New York Med. Jour.*, March 30, 1912.
Pilling, Albert: A Long Vacation, *West Canada Med. Jour.*, November, 1911.
Leavitt, F.: Rambles Through Hospitals Abroad, *St. Paul Med. Jour.*, October, 1911.
Cole, G. L.: European Observations, *South California Pract.*, February, 1912.
Beck, Carl: Surgery of To-Day in Germany, Austria and France, *Surg., Gynec. and Obst.*, March, 1912.
Else, Earl: Vienna as a Clinical Center, *Northwest Med.*, February, 1913, p. 44.
Stillson, J. O.: Some of the Clinics of Europe, *Jour. Indiana State Med. Assn.*, February, 1913, p. 60. This article contains a calendar of clinics in London, and gives the prices for attendance at some of the courses.

# Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

## MEDICOLEGAL RELATIONS OF PHYSICIAN AND PATIENT

A physician cannot attend a patient and at the same time evade any legal responsibility thereby entailed. Taking this as his text, Dr. W. C. Woodward (*The Surgical Clinics of J. B. Murphy*., February, 1913), sets forth the medicolegal relations of physician and patient. He says that a physician may evade the responsibilities of general practice. He may decline to take a case of obstetrics or may limit his work to surgery and decline to take medical cases, but when he does attend a patient he cannot evade the legal responsibility incident to such attendance. The relations of physician and patient are not to any large extent determined by statutes, but by the common law as interpreted in a long line of court decisions. A physician may refuse to treat any person, and even though the person be injured by such refusal, he incurs no legal liability, although it may be morally and ethically his duty to attend such person. His only punishment would be public censure and the pangs of his own conscience.

An infant or lunatic, a prisoner, or men in the Army and Navy are served by officially appointed physicians with or without their consent, or a person who becomes unconscious in the street may be attended by a physician without his consent. Aside from these few instances, the relationship between patient and physician is a voluntary and contractual one. In the case of a dispensary patient or a person treated by a corporation doctor, the absence of any direct contractual relation would not absolve the physician from responsibility. The contract may be written or oral, expressed in words, or implied from circumstances. In regard to the latter the law as interpreted by the courts would decide whether or not there was a contract. The quack who gives a written contract that no money will be demanded if a cure is not made usually has some clause in the contract which serves as a loop hole through which he may escape liability. A physician can lawfully contract with his patient to cure him or make no charge, but this form of contract is subject to limitations. He cannot lawfully contract to do an unlawful act such as to commit a murder, do a criminal abortion or unduly influence a person making a will. Nor can he by express agreement relieve himself from liability for damages on account of lack of ordinary knowledge or skill.

A physician engaged to attend a patient continues as long as the patient needs attention. If he desires to quit, he must give the patient definite notice and must then continue until another physician can be obtained or until the attendance is terminated by request or permission of the patient. Death or recovery will, of course, terminate a physician's obligation in this respect. In cases in which recovery is impossible but the patient continues to live for a long time and the physician's services are of no particular medical value, the obligation of the patient to pay the physician for continued services must be fixed by an express agreement, but if continued attendance is desired the physician has a right to collect his fees. A contract between physician and patient implies mutual obligations. The patient must give the physician a fair history of the case. He must submit to any reasonable examination and must follow all necessary instructions, and he must pay a proper fee. The physician must treat the patient with due diligence and with ordinary knowledge and skill and use his best possible judgment in his conduct of the case. If the patient does not comply with a reasonable request for an examination, the patient alone is responsible for the consequences. This applies also to following the physician's instructions.

Ordinary knowledge and skill on the part of a physician are measured by the knowledge and skill of physicians at the same time in the same or similar localities. The physician need not, however, be as learned as the best physician in his community, but he cannot be as incompetent as the poorest. So long as he keeps at or above the average, he cannot be called on to respond in damages even though he may not cure the patient or may even do actual injury.

Examination requires consent on the part of the patient or of some one authorized to give consent for him. Such consent may be expressed or implied. If a patient does any act such as removing clothing at the request of the physician, consent to the examination is implied. The same is true of operations. In operations, however, the extent of the physician's rights must be understood more clearly. The physician can lawfully do only so much as has been agreed on, and full authority to use discretion as a surgeon should be obtained before the patient goes under the anesthetic. A physician employed to treat a patient for any injury or disease has no right to disclose any information to any corporation or to any party who is liable to be sued by the patient because of such injury or disease, unless the patient consents to such a disclosure. Whether a physician may be required to make such a disclosure in a court will be determined by the statutes and decisions in any particular jurisdiction. A physician, however, who is employed by a person or corporation liable to be sued, for the sole purpose of making an examination of the patient, may report to the person or corporation who employed him what the result of the examination was.

## THE FEE-SPLITTING EVIL

The step which the American Medical Association is now taking in investigating the fee-splitting evil in the medical profession has been undertaken none too soon. This practice is the great corrupting element in the profession to-day; those practicing it have in many instances become little better than the newspaper advertising fakers, with their brokers out in the field dragging up the business for them. As it now is, the physician in the rural district or small town, practicing this custom, uses the commercial method of shipping to the highest bidder. The surgeon who is a true man of Christian character and with the highest type of surgical skill, who does not divide a fee, is forced to compete with many an unscrupulous surgeon, who may possess but very ordinary ability; but because he pays a liberal commission he gets the work, and what is still worse is doing a mutilating operation on healthy tissues, which I believe is not such a rare occurrence, and also that the percentage of patients sent to a surgeon who does not split a fee is small. I regard the man who sends the patient to a surgeon and accepts a part of the fee as a commission as more dishonorable than the surgeon, since the latter feels almost forced to do so. I have been much amused by hearing men who do the fee-splitting attempt to defend their course by explaining to our state society or other medical societies, that they always have it understood with the patient that they gave a part of the fee to the local physician. The shrewd fee-splitter does not try to explain it, as he knows there is too little truth in the above to be believed.—C. W. R., in the *Journal of the Kansas Medical Society.*

# Medical Education and State Boards of Registration

## COMING EXAMINATIONS

ARKANSAS: Regular, Little Rock, May 13-14. Sec., Dr. F. T. Murphy, Brinkley; Eclectic, Little Rock, May 13. Sec., Dr. C. E. Laws, Fort Smith.

FLORIDA: Jacksonville, May 12-13. Sec., Dr. J. D. Fernandez.

GEORGIA: Regular, State Capitol, Atlanta, May 8-10. Sec., Dr. C. T. Nolan, Marietta; Homeopathic, Atlanta, May 8. Sec., Dr. R. E. Hinman, 106½ Whitehall Street.

ILLINOIS: Armory Battery B, Chicago, April 29-May 1. Acting Secretary, Amos Sawyer, Springfield.

LOUISIANA: Homeopathic, 702 Macheca Bldg., New Orleans, May 5. Sec., Dr. Edward Harper.

NEVADA: Carson City, May 5. Sec., Dr. S. L. Lee.

NEW MEXICO: Santa Fe, April 14. Sec., Dr. W. E. Kaser, East Las Vegas.

WEST VIRGINIA: Huntington, April 14. Sec., Dr. H. A. Barbee, Point Pleasant.

### Kansas October Report

Dr. H. A. Dykes, secretary of the Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Oct. 15, 1912. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 12, of whom 11 passed and 1 failed. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| University of Colorado | (1912) | 75 |
| Rush Medical College | (1912) | 78, 82 |
| College of Physicians and Surgeons, Chicago | (1912) | 78 |
| Northwestern University Medical School | (1905) | 76 |
| Kansas City Hahnemann Medical College | (1912) | 77 |
| University Medical College, Kansas City | (1912) | 76, 80, 86 |
| Jefferson Medical College | (1912) | 76 |
| Woman's Medical College of Pennsylvania | (1910) | 91.5 |

FAILED

| | | |
|---|---|---|
| Ensworth Medical College, St. Joseph | (1909) | 51 |

### Ohio October Reciprocity Report

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports that at the meeting held Oct. 1, 1912, twenty-two candidates were licensed through reciprocity. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| College of P. and S., Chicago | (1910) | Illinois |
| Rush Medical College | (1911, 2) | Illinois |
| University of Louisville (1884) Indiana; (1910) West Virginia; (1911) Kentucky. | | |
| University of Maryland | (1899) | W. Virginia |
| Univ. Dept of Med. and Surg. | (1911) (1912, 3) | Michigan |
| University of Michigan, Homeopathic College | (1912) | Michigan |
| Michigan College of Medicine | (1883) | Michigan |
| Long Island College Hospital (1894) Vermont; (1910) | | New York |
| Cornell University Medical College | (1910) | New York |
| Eclectic Medical Institute, Cincinnati (1871) Indiana; (1912) Arkansas. | | |
| Medical College of Ohio | (1906) | Kentucky |
| Medico-Chirurgical College of Philadelphia | (1906) | New York |
| Western Pennsylvania Medical College | (1899) | Penn. |
| University College of Medicine, Richmond | (1899) | W. Virginia |

### New Mexico January Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports that at the meeting held at Santa Fe, Jan. 13-14, 1913, eleven candidates were licensed on presentation of satisfactory credentials. The following colleges were represented:

LICENSED ON PRESENTATION OF SATISFACTORY CREDENTIALS

| College. | Year of Graduation. |
|---|---|
| University of Colorado | (1903) (1912) |
| Chicago College of Medicine and Surgery | (1908) |
| Kentucky School of Medicine | (1901) |
| Baltimore Medical College | (1897) (1898) |
| University Medical College, Kansas City | (1902) |
| St. Louis University | (1905) |
| Washington University, St. Louis | (1907) |
| University of Pennsylvania | (1898) |
| Vanderbilt University | (1901) |

### Ohio January Reciprocity Report

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports that at the meeting held Jan. 7, 1913, twenty candidates were licensed through reciprocity. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| Northwestern University Medical School | (1911) | Illinois |
| Illinois Medical College | (1902) | W. Virginia |
| University of Louisville | (1908) | W. Virginia |
| University of Maryland | (1902) | Maryland |
| Baltimore Medical College | (1910) | Maryland |
| College of Physicians and Surgeons, Baltimore (1896) Pennsylvania; (1911) Maryland. | | |
| Detroit College of Medicine | (1908) | Michigan |
| Univ. of Mich., Dept. of Med. and Surg. | (1911) (1912) | Michigan |
| University of Michigan, Homeopathic College | (1911) | Michigan |
| St. Louis College of P. and S. | (1895) | Missouri |
| Jefferson Medical College (1874) Kansas; (1908) New York; (1910) West Virginia; (1906) (1911) Pennsylvania. | | |
| Western Pennsylvania Medical College | (1908) | Penn. |
| University of Pennsylvania | (1912) | Penn. |
| University of Pittsburgh | (1911) | Penn. |

# Book Notices

PSYCHANALYSIS. Its Theories and Practical Application. By A. A. Brill, Ph.B., M.D., Chief of the Neurological Department of the Bronx Hospital and Dispensary. Cloth. Price, $3 net. Pp. 337. Philadelphia: W. B. Saunders Company, 1912.

To be able to write a book on psychanalysis, one must not only have studied and understood Freud, but must also have had personal experience with the method. The author has complied with these requirements. He has read and comprehended Freud, or he would have been unable to furnish translations of Freud's books. In the preface Dr. Brill tells us many things about himself, from all of which we learn that he has also practiced psychanalysis. The entire subject is covered in twelve chapters on the following topics: the psychoneuroses, dreams, the actual neuroses, the compulsion neuroses (obsessions, doubts, phobias), psychanalysis and the psychoses, psychologic mechanisms of paranoia, psychopathology of everyday life, hysteric fancies and dreamy states, the Oedipus complex, the only or favorite child in adult life, anal eroticism and character, and Freud's theory of wit. The substance of several of these chapters has already appeared in neurologic journals, but found an appropriate place in this volume. In previous reviews of Freudian books, the English translations of which had been made too literal by Dr. Brill, we excused this on the ground of the pupil showing great deference to his master. Now that the author is writing in his own name, we are under the painful necessity of remonstrating with him for not always utilizing idiomatic English. Aside from this criticism, the book is a credit to its author. Not only has he given us a splendid summary of Freud's writings which are scattered in many volumes and journals, but he has also contributed important observations of his own. Of the chapters showing much originality in thought we may favorably mention especially those on the psychopathology of everyday life, and the only or favorite child in adult life, the latter of which may even be considered brilliant. A feature for which the author is to be especially commended is the addition of a short bibliography at the end of each chapter. In conclusion, we believe this book to be the best one-volume exposition of Freudian doctrine that has been written for the non-specialist.

THE CAREER OF DR. WEAVER. By Mrs. Henry Backus. Cloth. Price, $1.25 net. Pp. 379 with illustrations. Boston: L. C. Page & Co., 1913.

This is not a problem or love story; it is a real medical novel. Of course there is a love story running through it; there has to be. But the love story is incidental and subordinate. So also civic politics, graft and the reform movement are brought in. But primarily it is about medical men and medical affairs. The Dr. Weaver of the title-rôle—the villain of the story—is a popular and successful surgeon. His villany is not of the ordinary kind; it is the kind that results from an attempt on the

part of one who has gradually lost regard for the principles underlying medical ethics and practice to gratify personal and professional ambitions. Dr. Weaver has a free, public clinic which he uses to feed a private hospital. His practice (a specialty) is kept up by toadying to the rich, by fee-splitting, by advertising through sending to physicians reprints of medical articles his assistants have worked up, etc.

Dr. Jim, a younger brother, is the hero. He started practice in his native town, but against his better judgment was persuaded by his brother to come to the city and act as assistant. Dr. Jim does not like some of his brother's methods, does not hesitate to tell him so, and considers leaving. Nevertheless, he recognizes the awakening of his brother's conscience, and, when ruin threatens his brother, springs to the defense and skilfully averts disaster. It is the younger brother who represents the honorable, the ethical, the progressive physician. He is emphatic in his advocacy of the doctor going into politics, believing that the physician can do more good than any other individual in this way. Not the least pleasing part of the book is a chapter in which is given the reason why we should have a national Department of Health.

The book shows such a knowledge of medical affairs that the reader might suppose the author were a physician or a physician's wife, but she is not. The wife of a Cincinnati lawyer, the mother of three children, and a woman decidedly domestic in her tastes, she is the antithesis of a militant suffragette. She has literary ability also, for, while this is her first appearance as a novel-writer, there is little of the rawness so often found in the first venture.

Some physicians may think it unfortunate to have such a frank exposure of some of the evils which are afflicting the medical profession, but others will approve, feeling that the remedy for these evils can come only through publicity—not only to the profession but also to the public at large. On the whole, the book is fair, and physicians will read it with both pleasure and profit.

THE PROTEIN ELEMENT IN NUTRITION. By Major D. McCay, M.B., B.Ch., M.R.C.P., Professor of Physiology, Medical College, Calcutta. International Medical Monographs. Cloth. Price, $3 net. Pp. 216, with illustrations. New York: Longmans, Green & Co., 1912.

The author's object is to disprove Chittenden's contention that good health and efficiency can be maintained on a low protein diet. The evidence in disproof is derived from a careful study of diets in India and of the people there. The analyses of dietaries of various tribes and sects in India are given and discussed. The physical character of these people is also described and to some extent illustrated by pictures.

The first chapters make an excellent summary of the physiology of protein digestion, assimilation and elimination. Numerous and interesting original studies of protein assimilation and elimination of groups of natives of India are described in detail. The Bengali live constantly on a diet which is almost exactly that advocated by Chittenden. Most of the other inhabitants of India live on a more generous diet, especially one richer in protein. The author points out that the Bengali are physically a small, feeble race, lacking in muscular strength, nervous stamina and resistance to disease. In a word, physically they are inferior. McCay ascribes this to the lack of protein in their food, and minimizes the many other conditions which may help to produce these results. For instance, the Bengali begin to bear children in their teens. The average weight of the babies is a little over 5 pounds at birth. The mother's milk is small in quantity, and of inferior quality. When the infants are fed other things they are most injudiciously fed. These facts are brought out by the author, but little emphasis is placed on this bad start in life.

The old plea is made that, because 100 gm. or more of protein daily are demanded by all persons who can get it, this amount is necessary. Many new evidences of this and larger demands are pointed out by the author and the details of this information are most interesting. The author criticizes Chittenden's work for the inaccuracy of his methods, for suspected inaccuracy in collecting specimens from the men on whom he experimented, and dishonesty on the part of the men; that is, he suspected that they did not live on the prescribed diet alone. Those who know Chittenden, however, do not doubt the accuracy and honesty of his facts. Without being convinced that Chittenden is fully correct, we do not feel that the author of this book has proved his point. It is undoubtedly true that the Bengali are feeble, accomplish little work, live shorter lives, are more susceptible to diseases and succumb more easily than other natives of India, and the natives of other countries who have a more generous protein diet; but we are not convinced that all this is due only or chiefly to the diminished quantity of protein in their daily dietary. McCay believes that a low protein diet increases a person's susceptibility to diseases, but offers little evidence except the susceptibility of the Bengali to disease and the high mortality among them which certainly cannot justly be ascribed to diet alone.

We can commend this book to all students of dietetics because of the large amount of new information which is brought together in it, especially the studies of protein utilization by different races and groups of people in India and the analyses of their foods.

INTERNAL MEDICINE. By David Bovaird, Jr., A.B., M.D., Assistant Professor of Clinical Medicine in the College of Physicians and Surgeons of Columbia University. Cloth. Price, $5. Pp. 618, with 116 illustrations. Philadelphia: J. B. Lippincott Company, 1912.

Treatises on internal medicine or the practice of medicine can be placed in three categories; the first is an encyclopedic compilation as full and complete as the author can make; the second is more or less complete but contains the experience of a great clinician; the third is written for the writer's students. Our author frankly says in his preface that some treatises he finds "too long, too rich in information for those entering on the study of medicine." He has therefore made a book between such as are brief categories of facts and those that are complete and encyclopedic. While we do not recognize the need of such a book, and while a practitioner cannot get from this book all the information he will want on the subjects treated, the writer has accomplished fairly well what he set out to do.

Treatment is described in a superficial way. For instance, what is said of the treatment of diabetes would remind one who knows the subject well of many points to be observed, but certainly would not lead a recent graduate to do all that he should for a patient. The treatment of chronic parenchymatous nephritis is described in thirteen lines, and the dietetic treatment of interstitial nephritis in five. Under the heading of chronic polyarthritis the author places cases of arthritis "for which no satisfactory explanation can at present be given." This includes what is generally called arthritis deformans. The author places beriberi among the infections, though he admits that no infective agent is known to produce it, and he ignores all the proofs which have been demonstrated by many observers that it is due to a fault in the food-supply, to the removal of some imperfectly known substance from rice and wheat by milling processes. The disease has been produced experimentally, and both animals and men having it have been cured by feeding them the necessary material contained in the whole grain. The literature of this subject has become large in the last five or six years and should not have been ignored. The book is well written and fairly accurate. It is also well illustrated. It can be criticized, however, because it is not sufficiently complete.

PRINCIPLES OF ECONOMIC ZOOLOGY. Part 1—Field and Laboratory Guide. By L. S. Daugherty, M.S., Ph.D., Professor of Zoology, State Normal School, Kirksville, Mo., and M. C. Daugherty. Cloth. Price, $1.25 net. Pp. 276. Philadelphia: W. B. Saunders Company, 1912.

This book is a guide for field and laboratory study of (not about) the animal, and will be appreciated by those who are interested in the subject. It consists of questions and outlines carrying out the idea that the only right method for scientific training is based on observation and deduction from that observation, to be verified later by study of the text. The seasonal arrangement is helpful, and the abundance of material gives opportunity for variety of work and for exercise of individuality on the part of teacher or student.

ABHANDLUNGEN AUS DEM GEBIETE DER GEBURTSHILFE UND GYNAEKOLOGIE. Mitteilungen aus der zweiten Frauenklinik der königl. ung. Universität zu Budapest. Herausgegeben von W. Tauffer, Direktor der Klinik. Vol. II, Part I. Price, 4 marks. Paper. Pp. 199. Berlin: S. Karger, 1912.

The high character of the scientific work in Tauffer's clinic which was revealed in the first volume is maintained in the first part of the second volume. Frigyesi, in "Klinik der Placenta praevia," analyzes exhaustively the 110 cases which have occurred in the clinic during the last twelve years since it has occupied the present large buildings. He emphasizes, for both prognosis and treatment, the importance of determining the grade of the praevia. He urges the danger of the tamponade, to which he prefers colpeurysis. In partial placenta praevia with good pains he prefers rupture of the membranes. If this is ineffectual, and in cases of total praevia, he advises intra-amnial hysteurysis in clinics, and combined version with tamponade with the child's body in general practice. The Momburg compression should be ready for the third stage in all cases, and in women who have lost much blood it should be applied immediately after birth. The Duehrssen tamponade should be applied early.

Mansfeld in a short paper, "Schwangerschaft und Pyelitiden und ihre Behandlung," describes twenty-six cases, and concludes in regard to treatment that during pregnancy retention in the renal pelvis should be overcome, while during labor and the puerperium the treatment should be as expectant as possible.

Scipiades in "Die Vorbereitung der Bauchwand zu gynäkologischen Laparotomien" advocates the acetone-alcohol-iodin preparation in preference to the Fuerbringer method.

Frigyesi describes "Die Anwendung der Momburgschen Blutleere in der Geburtshülfe," which has been employed in the obstetric clinic in twenty-five cases.

Mansfeld in "Inversio Uteri bei Hypoplasie des Adrenalsystems" describes a fatal case in which he attributes the extreme atony of the uterus which led to the inversion to hypoplasia of the adrenal system and the consequent atony of the sympathetic.

Scipiades begins the discussion of "Myom und der Schwangerschaft" by considering in this first part of the volume the relation between myoma sterility and pregnancy based on 985 myoma cases, of which sixty-five were complicated with pregnancy.

THE PRACTICE OF DENTISTRY. A Practical Treatise on the General Practice of Dentistry, Operative and Prosthetic. Exclusive of Orthodontic Practice. By Leo Greenbaum, M.D., D.D.S., and Max Greenbaum, D.D.S. Cloth. Price, $6. Pp. 836, with 350 illustrations. New York: D. Appleton & Co., 1912.

This book, while taking up briefly the practical aspects of operative and prosthetic dentistry, is admirable on account of the way in which it discusses the most recent theories and opinions in the literature of dentistry. It is really surprising to find how much of such discussion is contained in the book, and toward these opinions and theories the authors maintain a judicial attitude which is gratifying. For physicians perhaps the most interesting chapter in the book would be the one on oral hygiene and its connection with the general diseases of the body.

THE PRACTITIONER'S ENCYCLOPEDIA OF MEDICINE AND SURGERY IN ALL THEIR BRANCHES. Edited by J. Keogh Murphy, M.C., F.R.C.S., Surgeon, Miller General Hospital for South-East London. Cloth. Price, $7. Pp. 1423, with illustrations. New York: Oxford University Press, 1912.

This work is designed to supply the need of a compact, practical encyclopedia, so that the busy practitioner can within a single volume at once find reliable information on all subjects with which he may be called to deal in his daily work. The object of the work appears to be fairly well accomplished in consideration of the space allowed.

A TREATISE ON DISEASES OF THE HAIR. By George Thomas Jackson, M.D., and Charles Wood McMurtry, M.D. Cloth. Price, $3.75 net. Pp. 366. Philadelphia: Lea & Febiger.

In the notice of the above book, March 29, page 1020, the name of the publishers was omitted.

# Medicolegal

## Law Violated by Chiropractor—What Constitutes Practice—Admissibility of Evidence—Result of Treatment Immaterial

*(Swarts vs. Sivery (R. I.), 85 Atl. R. 33)*

The Supreme Court of Rhode Island overrules the defendant's exceptions to a conviction on a charge of holding himself out as a practitioner of medicine, in violation of Section 8 of Chapter 193 of the general laws of Rhode Island, without having a license from the State Board of Health, the case being remitted to the superior court for sentence. At the time of the trial he was 52 years of age; had in his boyhood attended a grammar school, which he left at the age of 13 or 14 years, and he thought that he had attended for two terms some institute, the name or location of which he did not disclose. Thereafter he had carried on the business of a mason and been employed as a bricklayer. At the age of 44 he attended for three or four months a school of chiropractics.

The court says that the necessity for some legislation designed to regulate the practice of medicine and surgery has been very generally recognized. Legislatures in many of the states have enacted laws looking to the protection of the public from unscrupulous persons, or persons of insufficient education or acquirement, who might seek to treat disease and bodily ailments. Under the laws of Rhode Island any person desiring to practice medicine therein must first observe certain regulations regarding registration, must present satisfactory evidence of fitness to practice and pass such examination as the State Board of Health may require. Then, if the State Board of Health is satisfied that the attainments of the applicant are such as would warrant it, a certificate will be issued by said board authorizing him to practice medicine. Without such certificate no one is authorized to practice medicine in the state.

The word "chiropractic" or "chiropractor," according to the defendant, is coined from two Greek words, "chiro" and "practicas," signifying something done with the hands. The defendant in his testimony made use of the words "cure" and "cured" two or three times, apparently in a moment of forgetfulness; but on the whole he seemed studiously to avoid the use of those words, evidently under the impression that any attempt to cure disease would bring him within the practice of medicine. He further undertook to exclude himself from the practice of medicine by showing that he did not take the pulse or ascertain the temperature of the patient, did not administer drugs, and did not otherwise employ the means usually resorted to by physicians in aid of their diagnosis. He claimed that the chiropractic idea was not to cure the disease, but to remove the cause, and thus allow or bring about a recovery therefrom; a distinction which the court finds some difficulty in appreciating.

The practice of medicine does not wholly depend on the administration of drugs. It is a matter of common knowledge that the use of drugs by physicians of medicine has materially decreased, especially during the last twenty years or more, and that not infrequently the medical practitioner limits his efforts to cure or alleviate disease to the regulation of diet and exercise, or to prescribing some change of scene, climate, or environment, reaching a conclusion as to the needs of his patient after learning his physical condition through a proper diagnosis, in which he is materially aided by his knowledge of disease, its origin, its anatomic and physiologic features, and its causative relations.

The court thinks that the defendant was guilty of practicing medicine within the terms of the statute, the phrase "practice of medicine" to be taken in its ordinary acceptation and popular meaning. He undertook by a certain system or method of treatment to cure or alleviate disease or pain. His intentions so to do were clearly evidenced by the testimony of witnesses and the literature which he had adopted and distributed in the advertisement of his business, and he had exacted a certain compensation for each treatment or group of treatments. If it

be assumed that the method or system practiced by the defendant was of any value, it must also be assumed that some knowledge of disease, its origin, its anatomic and physiologic features, and its causative relations must be employed to locate and determine its nature, unless the defendant would have the court believe that all the ills to which flesh is heir proceed from the impingement of nerves between the sectional vertebrae of the spine, and that whenever one or more displaced sections are brought into proper alignment the disease will disappear without the need of any determination on the part of the chiropractor as to the location of the affected part or the nature of the ailment. This view of the matter the court is not prepared to accept.

The complaint charged that the defendant "did open an office with intent to practice medicine, and did hold himself out to the public as a practitioner of medicine by appending to his name the title of 'Chiropractor' and by representing that he was versed in and willing to practice for compensation the art of preventing, curing, and alleviating disease and pain." His attempt to divide the charge in the complaint into a series of separate charges, and then to individualize them in his argument, does not seem to the court to be warranted or to serve any useful purpose.

The defendant asked Dr. Swarts, the complainant, secretary of the State Board of Health, if he issued the complaint on the strength, alone, of the word "Chiropractor." This was objected to, and the court thinks properly excluded. It was immaterial. The complaint spoke for itself, and the mental attitude of Dr. Swarts in making the complaint was in no way important.

The defendant also interrogated some of the witnesses with a view to showing the benefits resulting to some of the parties who had been treated by the defendant, and that in some cases he had succeeded in alleviating their troubles after regular doctors of medicine had made the attempt and failed. These questions were objected to, and the court thinks properly ruled out as immaterial. The result of the defendant's treatment was of no consequence in this inquiry. The purport of the complaint was that the defendant had been practicing medicine without authority. The result of such practice to the patient, if shown, could not have aided the jury in determining the question submitted to them.

But it was not error to permit the introduction in evidence of certain books and pamphlets, relating to chiropractic schools and methods, to which the defendant had referred with approval in his testimony.

A request for an instruction of the jury that, "If the jury find that a chiropractic is not a practitioner of medicine and surgery, then your verdict should be for the defendant," was rightly refused. The question for the jury was not thus limited. The real question was the broader one, as to whether the defendant, under all the evidence in the case, had been guilty of practicing medicine without authority.

### Holder of Certificate Failing to Have It Recorded

(*Wilson vs. State (Okla.), 129 Pac. R. 82*)

The Criminal Court of Appeals of Oklahoma reverses a conviction of Wilson of practicing medicine in Woodward County without having at the time a valid and unrevoked certificate from the state board of medical examiners of the state of Oklahoma, because of error in the exclusion of a certificate which he held, which, the court says, should have been admitted in evidence, and which, when admitted, would have been a complete defense by the accused to the charge contained in the information. The court holds that a person who has been regularly licensed to practice medicine in Oklahoma, and who has failed to record the certificate, issued to him by the board having jurisdiction to issue licenses under the laws of the state, in the county in which he resides and maintains a place of business, cannot be convicted under section 4256 of the Compiled Laws of 1909 for practicing medicine without a license, but is subject to prosecution under section 4252, for failure to record his license in said county. A certificate to practice medicine in Oklahoma issued by the state board having jurisdiction to issue same, properly authenticated and under the seal of said board, is entitled to be received in evidence when tendered on behalf of a person who is on trial charged with practicing medicine without authority, and such certificate when bona fide is a complete defense to a prosecution based on section 4256. Had the accused been prosecuted under section 4252 of the statute, and had a conviction resulted, no relief could have been had in this court on the ground set out in the petition in error.

## *Society Proceedings*

### COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, MINNEAPOLIS, JUNE 17-20

Alabama State Medical Association, Mobile, April 15-18.
Amer. Assn. of Genito-Urinary Surgeons, Washington, May 6-7.
Am. Assn. of Pathologists and Bacteriologists, Washington, May 6-8.
American Climatological Association, Washington, May 6-7.
American Dermatological Association, Washington, May 6-8.
American Gastro-Enterological Association, Washington, May 5-6.
American Gynecological Society, Washington, May 6-8.
American Laryngological Association, Washington, May 5-7.
American Laryn., Rhin. and Otol. Society, Washington, May 8-10.
American Neurological Association, Washington, May 5-7.
American Ophthalmological Society, Washington, May 6-7.
American Orthopedic Association, Washington, May 6-8.
American Otological Society, Washington, May 6-7.
American Pediatric Society, Washington, May 5-7.
American Society of Tropical Medicine, Washington, May 6-8.
American Surgical Association, Washington, May 6-8.
American Therapeutic Society, Washington, May 5-6.
American Urological Association, Boston, April 15-17.
Arizona Medical Association, Globe, May 20.
Arkansas Medical Society, Little Rock, May 20-23.
Association of American Physicians, Washington, May 6-7.
California State Medical Society, Oakland, April 15-17.
Congress Am. Phys. and Surg. of N. America, Washington, May 6-7.
Connecticut State Medical Society, Hartford, May 21-22.
Florida Medical Association, Miami, May 13-15.
Georgia State Medical Association, Savannah, April 16-18.
Illinois State Medical Society, Peoria, May 20-22.
Iowa State Medical Society, Des Moines, May 7-9.
Kansas Medical Society, Topeka, May 7-8.
Louisiana State Medical Society, Baton Rouge, April 22-24.
Maryland Medical and Chirurgical Faculty, Baltimore, April 22-24.
Missouri State Medical Association, St. Louis, May 13-15.
Montana State Medical Association, Great Falls, May 14.
Nat. Assn. for Study and Prev. of Tuberculosis, Washington, May 8-9.
Nebraska State Medical Association, Omaha, May 13-15.
New Hampshire Medical Society, Concord, May 13.
New York State Medical Society, Rochester, April 29-May 1.
North Dakota State Medical Association, Minot, May 7-8.
Oklahoma State Medical Association, Enid, May 13-15.
South Carolina State Medical Association, Rock Hill, April 15-17.
Texas State Medical Association, San Antonio, May 6-8.
West Virginia State Medical Association, Charleston, May 21-23.

### NEW YORK ACADEMY OF MEDICINE

*Meeting held March 6, 1913*

The Second Vice-President, DR. W. B. JAMES, in the Chair

#### Devices for Artificial Respiration

DR. SAMUEL J. MELTZER: Much progress has recently been made in dealing with temporary failures in respiration. In my opinion the Sylvester method is more satisfactory than that of Schäfer, but I suspect that there is a fairly large proportion of medical men who are unprepared to use either of these methods efficiently. By neither of these methods can the respiration be kept going for hours, and hence a search has been made for more efficient devices for maintaining artificial respiration. As a member of the committee appointed by the Bureau of Mines to investigate such devices I am not at liberty to express my opinion as to their actual value more than to say that the invention of other devices has not yet been made superfluous by the existence of those already on the market.

My method of pharyngeal insufflation gave satisfactory results with animals, but when tested on dead human bodies was found to permit the escape of air through the nose and mouth, and this could not be prevented in the same easy man-

ner in which it had been accomplished in animals. In endeavoring to adapt this method to the requirements of the human anatomy I have made studies in carrying on the respiration by means of a well-fitting face-mask. In both of these methods a heavy weight should be placed on the abdomen and reinforced by the application of tight bandages in order to prevent the entrance of the accumulated air into the gastro-intestinal tract. This restriction of abdominal respiration causes the blood to be driven from the paralyzed blood-vessels of the splanchnic region into the heart and medulla oblongata where it is most needed. The external arrangement for an efficient rhythmic and safe control of the respiration in both methods consists of a source for gas or air-pressure, of a valve regulating the rhythm of respiration and of a safety-valve. The two methods are differentiated by the fact that in the pharyngeal method the pharyngeal tube is of fairly large transverse diameter and capable of filling out the entrance into the pharynx so that the insufflated air cannot escape back through the mouth so readily. The pharyngeal end of the tube is cut off slantingly so that when inserted into the pharynx the end of the lower wall remains anterior to the opening of the larynx, while the upper wall extends to the posterior wall of the pharynx, raising the soft palate and the uvula so as to shut off the pharynx from the nasal cavity. When this apparatus is used the tongue is pulled well out of the mouth, the mouth opened wide, and the pharyngeal tube inserted as far as it will go. The pharyngeal tube is then connected with the bellows or oxygen tank. The air or oxygen is then turned on, a person grasps the respiratory valve and turns the ring from side to side every three or four seconds, thus keeping up an efficient respiration. A tightly fitting mask, with a nozzle for connection with the blowing apparatus, tightly attached to the head will do efficient service instead of the pharyngeal tube. The Schäfer method can easily be combined with either of these methods.

### Protein Assimilation

DR. DONALD D. VAN SLYKE: Our problem is that of tracing the proteins of the food from the alimentary canal through the blood-stream into the tissues, and there ascertaining their final fate. The confusion and controversy which have resulted from the attempts to solve this problem seem to be due to the failure to apply methods which are sufficiently accurate and sensitive to determine whether amino-acids and proteins are or are not present in the blood, and whether or not they pass into it from the alimentary tract during digestion. We have developed a method which may solve the problem. When amino-acids are brought into a solution of nitrous acid under proper conditions, an almost instantaneous decomposition of the amino group occurs, and its nitrogen is evolved in the form of an elementary nitrogen gas. This gas can be measured accurately, and affords a delicate means for detecting amino-acids in minute quantities.

On experimenting with this method we found that the blood of a dog always contained a small amount of amino-acid nitrogen, and that this amount could be more than doubled by feeding protein. The concentration of the amino-acids in the blood was small even at its maximum but was entirely sufficient to account for the most rapid imaginable absorption of proteolytic products. It is now certain that digestive products are taken directly into the blood, and although the possibility of some synthesis in the course of absorption has not been excluded, there is at present no reason to believe that any such roundabout mechanism plays an important part in normal absorption. From the low amino-nitrogen content of the blood, it is apparent that if all the digestive products enter the circulation they must be removed from it very rapidly in order to keep their concentration so low.

In order to test the rate at which the removal occurs, we injected 12 gm. of alanin intravenously into a dog. The nitrogen was nearly 2 gm., an amount which in the form of protein could keep the animal in equilibrium for a day; yet five minutes after the injection, 88 per cent. of the injected amino-nitrogen disappeared from the circulation, and after half an hour the amino figure of the blood had dropped to 12 mg., which is about normal for a dog in digestive activity. The experiment was repeated with mixtures of all the amino-acids yielded by hydrolysis of casein, with absolutely similar results. It is probable that in man the fluctuations during digestion are less than those observed in dogs, owing to the lesser amount of protein ingested.

The next question that confronted us was what becomes of these products when they vanish from the circulation. Owing to the velocity with which the amino-acids disappear from the circulation it seemed that a physical explanation was more probable than a chemical one. Hence we analyzed the tissues after known amounts of amino-acids had been injected, observed them to disappear from the circulation and found that they were in fact merely absorbed by the tissues. As nearly as we could estimate it, all the injected amino-nitrogen was found again in the muscles and other organs. It will be seen that the tissues, even in a fasting animal, are about ten times richer than the blood in amino-acids. When the concentration of the latter is increased in the blood by injection, absorption into the tissues immediately occurs and leads to a new equilibrium between the blood and the fixed organs in respect to the content of both in amino-acids.

That such a state of equilibrium exists is indicated by the fact that, notwithstanding the extreme avidity of the tissues for these products, we never entirely removed them from the blood. A point worthy of note is that in the case of muscles a fairly definite saturation point exists which sets the limit to the amount of amino-acids that can be absorbed. We have never been able to force the amino figure of the muscles above 75 mg. per hundred grams of tissue. The statement that the amino-acids entering the blood-stream are merely absorbed without chemical alteration by the tissues is a very loose description of the phenomenon for which the complete explanation will be far from easy.

Our experiments, undertaken to determine how long the amino-acids can remain unaltered in the tissues, showed that the amino-acids disappear from the kidneys at a rate incomparably greater than that at which they leave the muscles, or apparently the other organs analyzed at the end of the experiment. In the muscles the drop was so slight that it hardly exceeded the differences which can normally occur in different sections of the same organ. The disappearance of the amino-acids from the liver and kidneys was accompanied by an increase in the urea content of the blood. These facts strengthen the view that the liver is active in transforming the products of protein digestion into urea. It was somewhat surprising to note a similar disappearance of amino-acids from the kidneys. Other experiments seemed to show that while the muscles are stored with amino-acids up to their saturation point after a heavy feeding of meat, the liver and kidneys metabolize their portion of the products as rapidly as they receive them. It is possible that the entire task of removing the digestive products from the circulation, when the other tissues become saturated, devolves on the liver and kidneys, and that most of the proteolytic products which they take up are normally broken down, the nitrogenous portion being broken up into urea. This hypothesis will explain many previously known facts.

#### DISCUSSION

DR. LOUIS FAUGERES BISHOP: In discussing this subject some time ago I was taken to task for predicting the existence of amino-acids in the blood. I have been making an intensive study of arteriosclerosis during the past three months, and I believe that arteriosclerosis is a disorder of the ultimate cells of the body in which the blood-vessels partake of an important share. The cells become sensitive to particular proteins, and this originates a subsymptomal reaction that causes the damage. The discovery of the lodgment of the amino-acids in the tissue so quickly that their detection in the blood is difficult is of extreme interest.

### Studies in Experimental Pneumonia

An abstract of this paper by Dr. Martha Wollstein was published in THE JOURNAL, March 22, 1913, p. 942.

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Anatomy, Philadelphia

*March, XIV, No. 3, pp. 299-399*

1 *Histology of Thymus. A. M. Pappenheimer, New York.
2 *Development of Elasmobranch Liver. R. E. Scammon, Minneapolis.

1. **Histology of Thymus.**—The glands examined by Pappenheimer were obtained during the months of July, August and the early part of September from freshly caught specimens of *Rana clamata*; a few also from spotted frogs shipped from a distance and showing in consequence of the prolonged starvation, marked involutional changes. In addition to the usual histologic methods a variety of granule stains were used. Minute granules of a type not hitherto described were demonstrated in the frog's thymus by the use of Benda's mitochondrial method. Larger gentianophil granules and droplets were found in some of the cells of this type. Whether these were secretory or degenerative in nature was not determined. Granules, possibly of the same nature as those demonstrable by the mitochondrial methods, were shown to be present in the living cells by the use of vital stains. The small thymic cells also contain granules, and in this respect, the small thymus cells are identical with the lymphocytes of the blood.

In clotted plasma cultures, there is a radical difference in the behavior of the small and large thymus cells. The former show practically no capacity for further proliferation, but after a period of active motility, undergo degeneration; the latter exhibit active growth, often in the form of syncytial cell masses. They are actively phagocytic toward the degenerating small thymus cells. The small cells of the rat thymus show absolutely no morphologic differences from the lymphocytes of the lymph-nodes; they exhibit the same active motility and the same proneness to undergo degeneration when kept *in vitro*. The growth of rat thymus differs from that of lymph-nodes (1) in the early rarefaction of the implanted fragment, with the appearance of numerous large phagocytic cells; (2) in the formation of tissue-like plines composed of epithelial reticular cells differing in their appearance from the fusiform or stellate cells which grow from the connective tissue capsule or reticulum of the lymph-nodes. This characteristic difference corresponds to the different histogenesis of the thymic reticulum and suggests a different function.

2. **Development of Elasmobranch Liver.**—The observations made by Scammon in the course of his embryologic studies may be summarized as follows: The liver arises in Acanthias embryos of from 20 to 25 segments as a pair of shallow lateral diverticula from the lateral walls of the ventral half of the gut. These diverticula extend both behind and in front of the anterior wall of the yolk-stalk. The growth of the fore-gut posteriorly through the coalescence of the lateral walls of the yolk-stalk causes the lateral hepatic diverticula to lie mainly in front of the anterior wall of the yolk-stalk in later stages. The median ventral liver pouch described by Balfour and others is, in Acanthias at least, a secondary structure produced by the fusion of the anterior ends of the primary lateral diverticula. Three secondary parts are derived from each primitive lateral hepatic diverticulum. The anterior portion goes to the median hepatic pouch. The upper part of the middle portion forms the lateral hepatic pouch. The posterior part goes to form a posterior connecting segment between the liver and gut. This has been termed the pars ductus lateralis and later becomes a part of the ductus choledochus. At an early stage the liver shares in the left to right rotation which produces the spiral valve in the intestine and the lateral vitelline groove in the yolk-stalk. The median hepatic pouch is somewhat differentiated into two parts: an anterior one, the pars hepatica mediana to which the lateral pouches are mainly attached and which gives rise to hepatic trabeculae, and a posterior one, the pars ductus mediana, which forms the anterior part of the ductus choledochus. The anterior part of the left hepatic duct is formed from the left hepatic pouch and the left part of the pars hepatica mediana, and the anterior part of the right hepatic duct from the right hepatic pouch.

The hepatic ducts and ductus choledochus are very markedly rotated to the right about a vertical axis in a comparatively late stage. This rotation is probably due to the great growth of the left omphalo-mesenteric vein and the formation of a venous sinus below and to the left of the anterior end of the ductus choledochus. The difference in size of the right and left omphalo-mesenteric veins may be due to the longitudinal rotation of the gut. By this rotation the space between the left hepatic pouch and the median pouch and gut is somewhat increased while the corresponding space on the opposite side is decreased. A third shifting of the duct system and the gall-bladder forward and upward occurs at a much later stage. It is probably brought about through the great increase in size of the internal yolk sac.

The minor hepatic ducts arise as the elongated pedicles of definitely placed groups of hepatic tubules. These tubule groups are differentiated at the time when the liver loses its dorsal connection with the fore gut. The variations in position of the minor hepatic ducts in the adult depend on the degree of shifting of these tubule groups at the time when the main hepatic pouches are differentiated into hepatic ducts and when the rotations mentioned above take place.

The gall-bladder appears much later than do the primary lateral hepatic diverticula. It arises posterior to the hepatic anlage as a distinct evagination of the gut at the juncture of the floor of the fore-gut and anterior wall of the yolk-sac, and its intimate connection with the liver duct system is acquired secondarily. The gall-bladder loses its dorsal and posterior connection with the gut and is shifted forward and downward until its greatest axis is in the transverse plane of the body. In this way its connection with the ductus choledochus comes to lie in front of that of the lateral hepatic ducts. Subsequently the gall-bladder is again shifted upward and forward so that the cystic duct passes backward and downward to join the ductus choledochus.

The ductus choledochus is formed from three distinct elements: the anterior part from the pars ductus mediana, a derivative of the secondary median hepatic pouch; the middle part from the pars ductus lateralis, a derivative of the posterior part of the primary hepatic diverticula, and a posterior part formed from the floor of the duodenum and valvular intestine.

### American Journal of Public Health, New York

*March, III, No. 3, pp. 197-296*

3 Health Work Progress in America. F. E. Fronczak, Buffalo.
4 How Shall We Spend the Health Appropriation? C. V. Chapin, Providence, R. I.
5 Elementary Theory and Principles of Street Cleaning. S. Whinery, New York.
6 Epidemiology of Poliomyelitis. W. H. Frost, Washington, D. C.
7 Seasonal Diseases and Seasonal Temperatures. C. E. North, New York.
8 *Use of Bismuth Salts in Media to Detect Formation of Sulphur Bodies of Bacterial Origin. S. T. Darling, Ancon, C. Z.
9 Importance of Negative Eugenics or Prevention of Ill-Borneness. W. Hutchinson, New York.
10 Need for General Health Protective Surveys and Programs. M. N. Baker, New York.
11 Unique Organization of Milk Dealers. F. D. Bell, New York.
12 Sanitary Improvement in Cuba as Demonstrated by Statistical Data. J. Le Roy y Cassá, Havana, Cuba.
13 Annual Report of Condition of Yellow Fever Throughout Mexican Republic. E. Liceaga, Mexico City.
14 Estimation of Daily Soot Deposit in Indianapolis. H. E. Barnard and W. D. McAbee, Indianapolis.
15 Control of Temperatures in Pasteurization of Milk. C. H. Kilbourne, New York.

8. **Use of Bismuth Salts.**—During an investigation of the effect of bismuth subnitrate on intestinal bacteria and pathogenic entamebas, Darling observed that the stools, which became quite black after the administration of large quantities of the drug, contained many crystals of bismuth subnitrate the surface of which had become coated with bismuth sulphid. The crystals of bismuth subnitrate were not disintegrated but had taken up the hydrogen sulphid generated by the intestinal bacteria. In addition to this, he was struck by

the enormous numbers of micrococci and bacteria which were jet black in color evidently due to the absorption or assimilation of bismuth and its conversion into sulphid.

On account of the facility with which bismuth subnitrate is sulphuretted by certain micrococci and bacteria, it was thought that it might be used to advantage for the detection of sulphid-formers among water bacteria and for the detection of sulphur bodies of bacterial origin, and a series of comparisons was made with bismuth and lead acetate media. It was seen that bismuth subnitrate broth possessed certain advantages over broth prepared with lead acetate as usually advised for the detection of sulphid-forming bacteria, for a number of microorganisms were stained black or stained the media brown or black in bismuth broth, which exhibited no such changes in lead acetate broth. Inasmuch as the object of the lead acetate media is to demonstrate by a color reaction the formation of hydrogen sulphid by a microorganism, it would seem that if bismuth has a wider or different range of usefulness for this purpose, it should be employed instead of lead or in combination with it.

Darling's observations lead him to the opinion that the staining of bismuth subnitrate and lead acetate media is not always due to the excretion of hydrogen sulphid, as is generally believed, but may also be due to the assimilation of these heavy metals by certain microorganisms and the formation of metallic sulphids, by sulphur not necessarily existing as hydrogen sulphid but due to the intracellular splitting off of sulphur or sulphur bodies by hydrolysis, autolytic or other enzyme action.

## American Journal of Obstetrics and Diseases of Women and Children, New York

*March, LXVII, No. 423, pp. 433-648*

16 *Chorionic Villi in Uterine Wall Eighteen Years After Last Pregnancy. E. Ries, Chicago.
17 *Difficulty of Producing Sterility by Operations on Fallopian Tubes. V. N. Leonard, Baltimore.
18 Classic Cesarean Section. E. P. Davis, Philadelphia.
19 Advantages of Suprasymphyseal Extraperitoneal Cesarean Section in Clean as Well as in Presumably Infected Cases. B. C. Hirst, Philadelphia.
20 Cesarean Section for Central Placenta Praevia. C. Foulkrod, Philadelphia.
21 *Treatment of Puerperal Sepsis at Sloane Hospital for Women. W. Ward, New York.
22 *Cases of Hydatidiform Mole at University Maternity. P. F. Williams, Philadelphia.
23 Why Incidental Removal of Vermiform Appendix, When Reasonably Possible, Should be the Rule. A. Goldspohn, Chicago.
24 *Chronicity of Appendicitis. J. H. Jacobson, Toledo, O.
25 Omental Cysts. L. Frank, Louisville, Ky.
26 *Good Way to Treat Femoral Hernia. T. B. Noble, Indianapolis.
27 *Cesarean Section in Double Uterus and Double Vagina. N. S. Scott, Cleveland.
28 *Postoperative Acute Dilatation of Stomach. C. E. Ruth, Des Moines, Ia.
29 Relation of Weight Curve of Infant to Food. J. M. Brady, St. Louis.

16. **Chorionic Villi in Uterine Wall.**—The case reported by Ries presents the unusual feature of degenerated villi found in the veins and in the wall of a fibroid uterus eighteen years after the last pregnancy. He believes that it tends to clear up the pathogenesis of those cases of chorio-epithelioma in which the tumor did not arise until many years after the last pregnancy. True, no chorionic epithelium was found on these villi. The epithelium-like covering of the villi which was observed cannot be considered anything but endothelium. He does not know at what time since the last pregnancy the chorionic epithelium became lost and was replaced by vascular endothelium. The absence of chorionic epithelium does not militate against the possibility of a chorioepithelial tumor originating from these villi at some time during the eighteen years which had elapsed between the last pregnancy and the removal of the uterus. The absence of the chorionic epithelium is evidently one of the reasons why in this case no chorioepithelioma was formed. The importance of this case, Ries believes, lies in the fact that it presents the hitherto unparalleled picture of a benign survival of chorionic villi in the uterine wall for as many as eighteen years after the last labor.

17. **Operations on Fallopian Tubes.**—Of the twenty-three instances in the gynecologic clinic of the Johns Hopkins Hospital, in which it was deemed advisable to attempt sterilization by ligation of the tubes, fourteen cases have been successfully traced. Of this number, five patients were over 40 at the time of operation. Two of the remaining nine patients became pregnant after operation. Until more satisfactory methods have been devised, Leonard says it would appear that extirpation of the tubes, together with excision of a wedge of uterine cornu, had best be adopted as the only simple procedure reasonably sure to prevent conception.

21. **Treatment of Puerperal Sepsis.**—In the last 8,000 deliveries at the Sloane Maternity, there have been thirty-nine cases of puerperal sepsis, 0.485 per cent. Of these thirty-nine cases, thirty-three had no interference postpartum except simple vaginal and intrauterine douches. There were four digital explorations on four patients. In two cases this was sufficient, while in the other two extension into the parametrium took place requiring later posterior vaginal sections. In the first of these latter two, the single colpotomy with drainage was sufficient, while in the other new local abscesses developed and required further incision and drainage. In this last case there were in all three vaginal sections done, and finally a laparotomy was necessary; through-and-through drainage was instituted with the result of controlling and clearing up the process. In one other patient, delivered by cesarean section, there was a breaking down of both abdominal and uterine wounds, and through-and-through drainage was instituted after the wounds had opened up as a result of the infection. This was done at one of the daily dressings, without anesthesia. The only other operative procedure was the opening by laparotomy of an intramural abscess of the uterus and draining by vagina as well as from above.

Of these thirty-nine patients, eleven died, a mortality of 28.2 per cent. However, two patients hardly belong to the series, as one died of pulmonary embolism after being up and about, convalescent, after a mild infection of a few days' duration, and the other, admitted in the eighth month of pregnancy, with a red-blood cell count of 1,100,000, with all the characteristic blood changes of a true primary pernicious anemia, died of exhaustion and anemia a few days post partum, although there probably was an element of infection in her case. All the remaining patients made good recoveries.

The causes of death in the eleven patients were: General septic peritonitis, 5 cases; pyemia and exhaustion, 4 cases; pernicious anemia, pulmonary embolism, each one case. In all these cases, save the last two, in which the sepsis was slight, there was a true bacteremia yet with no localized foci capable of being attacked by surgery. So none of the fatal cases had any of the operative measures detailed above, with the one exception of the through-and-through drainage employed in the case of infected cesarean section.

The prophylactic treatment employed consists in extreme care as to surgical asepsis, limiting as far as possible all antepartum, intrapartum and post-partum examinations, interference and instrumentation, resorting to them only when clearly indicated. The active treatment consists in: A. Obtaining adequate uterine drainage, first, by simple vaginal and intrauterine saline douches. This proving insufficient to control the process, explore the uterus once, and once only, to make sure that it is empty of foreign products, using the finger for the exploration, and with a minimum of trauma to the uterine tissues. B. Treat expectantly secondary foci as they arise, and C. Support the general condition of the patient.

22. **Cases of Hydatidiform Mole.**—In this series of four cases reviewed by Williams, two women had previously normal pregnancies; in the other two it was the first pregnancy. The ages varied, as follows: 22, 26, 27 and 30 years. Bleeding was a prominent symptom in three cases, abdominal pain in two, nausea in two, and severe vomiting was present in one case. The enlargement of the uterus as compared with that of normal pregnancy for a similar period of amenorrhea was in one case, twice the size to be expected, in a second case it was only slightly greater. The difference from normal in the two remaining cases could not be determined on account of the

obscure menstrual histories they presented. Cystic degeneration of the ovaries was present in two cases. In one there was a definite lutein cell proliferation, in the second an atypical lutein cell formation of the lining wall of the cysts. In the treatment of these cases one was subjected to a panhysterectomy; another had a cystic ovary removed by a laparotomy; the mole in this case was expelled spontaneously after packing the cervix. In the two remaining cases the treatment was dilatation of the cervix and curettage of the uterine cavity. Death occurred in two cases, in the first case from acute hepatic degeneration, and in the second instance from a hemorrhage, supposed to have been from a pulmonary tubercular process.

24. **Chronicity of Appendicitis.**—Infection of the vermiform appendix, Jacobson believes, is of enterogenic origin, and as a rule is a slow process resulting from stasis of intestinal contents in the cecum, and in his opinion is essentially a chronic disease. Chronic inflammatory changes in the appendix usually precede the acute attack. Stasis in the cecum is favored by the antiperistalsis of the ascending colon in combination with a mobile cecum or adhesions about the ileocecal junction.

26. **Treatment of Femcral Hernia.**—Noble makes an incision 4 or 5 inches in length parallel with Poupart's ligament midway between this ligament and the saphenous opening. In older persons, it is made in the sulcus formed by the thigh on the abdomen. The subcuticular fat and areolar tissue is wiped by gauze dissection from the surface of the sac well down and into the external margin of the saphenous opening. The skin and subjacent fat of the upper margin of the wound are then pushed upward until Poupart's ligament and the lower aspect of the fibers of the external oblique muscle are brought plainly into view. The base of the wound now contains the lower fibers of the aponeurosis of the external oblique, Poupart's ligament, the falciform process of the fascia lata, the saphenous opening and the hernial sac.

One-half inch above Poupart's ligament and directly above the femoral canal, the fibers of the external oblique are separated, and a gridiron opening is made through the internal oblique and transversalis muscles down on the peritoneum. The finger now separates the transversalis fascia from the peritoneum, to which it is loosely attached, the separation being carried completely around the process of peritoneum which has been pushed down through the femoral canal to form the hernial sac. This completely frees the sac from all its surrounding tissues. The peritoneum is opened through the gridiron incision and an opening is also made in the hernial sac. This gives definite knowledge of the conditions of the hernial contents and makes reduction much easier. After proper care has been given to the contents of the hernia, the sac is easily pulled up through the canal, tied and cut away.

The removal of the sac and pulling the lower margin of the wound forward, brings into view the upper margin of the hernial canal (now empty), Gimbernat's ligament, lower border of Poupart's ligament and the iliac vein. These structures are seen to form an isosceles triangle, the lower side of which is Gimbernat's ligament, the upper Poupart's, and the base the iliac vein. One or two sutures of No. 1 chromic gut are made to include the two sides of this triangle which when tied, completely obliterate the intervening space closing the canal. In other words, with the vein in view, the ileopectinal fascia is sutured to the lower border of Poupart's ligament, and definite knowledge is had relative to the encroachment on the vein. A running suture of plain gut next closes the gridiron opening, and a subcuticular stitch approximates the skin.

27. Abstracted in THE JOURNAL, Sept. 28, 1912, p. 1210.

28. **Postoperative Acute Dilatation of Stomach.**—Failure of the cardiac orifice to readily yield, Ruth believes, is the one essential to acute dilatation of the stomach. Motor paralysis of the stomach, whether due to central or peripheral paresis, to inhibition through the solar plexus and splanchnic stimulation, or any narcotic or toxic agent, may cause the condition. Reflex inhibitory influence is well shown by failure to produce dilatation of the stomach from ligating the duodenum alone, but to ligate the duodenum and crush the testicle in dogs promptly causes dilatation of the stomach. The greater frequency of the condition following surgery of the upper abdomen, in which wick and other drains are used, indicates the importance of inhibitory influences of the solar plexus, trauma and irritation. Knowing that paralyzed bowel is obstructed bowel and peristalsis can alone obliterate kinks due to paralysis, one should not expect the stomach to be subject to different laws. On whatever side of the cardia the gastric muscularis is weakest, the dilatation will be greatest, causing the cardiac opening to be pushed to the opposite side and more or less angulated against the sharp margin of the cardiac opening in the diaphragm, thus adding another factor of difficulty in emptying the stomach by vomiting.

Operative absurdity is at once indicated by the impossibility of draining a paralyzed stomach into a paralyzed gut, and a considerable part of the intestinal tract may be expected to be paralyzed in every case of acute dilatation of the stomach by the same cause which produced the gastric paresis and paved the way for dilatation. The permanency of acute dilatation of the stomach will depend on the cause operating to produce the paresis and on the degree of distention. Acute dilatation of the stomach sometimes occurs and progresses rapidly during an operation. As only a few drops of ether in the stomach may cause great dilatation, it is necessary to prevent the patient from swallowing ether. Acute dilatation of the stomach may begin when the small intestines are very much distended with gas and not yet paretic. Occlusion by the root of the mesentery must be secondary else the tube and lavage would not afford relief. The need of vigilance must not be relaxed in any period of life, as the condition has been encountered at nine months and at 74 years of age.

In all cases the stomach tube must be passed at once as it represents no danger and its early and thorough use gives almost the only hope of cure. It is so easy to detect the first manifestations of acute dilatation of the stomach by touch that Ruth is convinced that at every visit for the first few days after an operation the surgeon should pass the hand down over the ensiform cartilage and note whether there is distention of the epigastrium and when it is detected he should pass the stomach tube at once and prevent grave complications. This precaution is especially important in abdominal cases and interns as well as nurses should be taught the importance of this sign of fulness in the epigastrium in order that danger from acute dilatation of the stomach may be at once detected and dealt with in time, even though the surgeon may not be present, because of the extreme rapidity with which it may develop into a condition of the utmost gravity.

## Boston Medical and Surgical Journal

*March 27, CLXVIII, No. 13, pp. 449-484*

30 Few Important Points in Roentgenoscopy of Digestive Tract. F. W. White, Boston.
31 Experimental Production of Lesions Resembling Pellagra. H. M. Adler, Boston.
32 *Present Position of Abdominal Cesarean Section in Eclampsia. J. T. Williams, Boston.

32. **Abdominal Cesarean Section in Eclampsia.**—Excluding operations performed post mortem and on the dying, Williams has collected eighty-five cases from the literature. In twenty-one of these there existed a mechanical indication as well for cesarean section, but this in no way influenced the actual result of the operation. These were all cases of well developed eclampsia. Among the 85 cases there were 41 maternal deaths, a mortality of 48.2 per cent. This mortality is distributed as follows: From sepsis, 7 deaths; from hemorrhage from broad ligament after Porro operation, 1; from rectal hemorrhage, 1; from tuberculosis, 1; from exhaustion, 1; from pneumonia, 1; from eclampsia, 20. In 9 cases the immediate cause of death was not stated, but presumably was eclampsia. Therefore, Williams concludes that abdominal cesarean section in eclampsia should be restricted to those cases in which there is a pelvic contraction sufficient in itself to demand it, and possibly also early cases of threatened eclampsia at or near term, where the shock of a vaginal delivery seems to offer much greater danger than the added strain imposed on the excretory organs by cesarean section.

### Iowa State Medical Society Journal, Clinton

*March 11, No. 9, pp. 625-696*

33 Abdominal Cesarean Section for Placenta Prævia. D. Macrae, Council Bluffs.
34 Carcinoma of Cecum; Its Diagnosis. O. J. Fay, Des Moines.
35 Physiology and Pathology of Hypophysis Cerebri. J. T. McClintock, Iowa City
36 Traumatic Injuries to Cornea. T. U. McManus, Waterloo.
37 Tuberculin Therapy of Pulmonary Tuberculosis. R. T. Pettit, Ottawa, Ill.
38 Urethral Obstruction by Prostate, with Report of Twenty-Six Cases. W. L. Allen, Davenport.
39 Treatment of Tonsillitis. F. G. Murphy, Mason City.
40 Actinic Sunlight in Treatment of Chronic Lesions of Skin. J. W. Kime, Fort Dodge.

### Journal-Lancet, Minneapolis

*March 15, XXXIII, No. 6, pp. 159-190*

41 Trachoma with Special Reference to State of Minnesota. T. Clark, Evansville, Ind.
42 Operations for Uterine Prolapse Compared. A. W. Abbott, Minneapolis.
43 *Regeneration of Tendons. M. S. Henderson, Rochester, Minn.
44 History of Case of Spasmophilia with "Repeated Absences." J. P. Sedgwick, Minneapolis.
45 Eye-Strain as Etiologic Factor in Functional Diseases. J. C. Clark, Mt. Vernon, S. D.

**43. Regeneration of Tendons.**—In the experiments reported by Henderson the work was done on the tendo Achillis. One and a half inches of tendon was removed. The suture material used to bridge the defects was black linen. Two strands were the most used, the purpose being to provide a scaffolding on which repair could take place. In the dogs in which the sheath was saved, it was always closed with plain continuous catgut sutures. The skin was sutured with plain catgut. At the end of the operation a plaster-of-Paris cast was applied from the toes to the groin. This was removed in two weeks, after which time the dogs were allowed to run at will in their pens. The dogs were killed with chloroform at the end of six months; the legs were amputated and macroscopic and microscopic examination made.

In none of the animals in which the sheath was removed was there a well-marked freely movable sheath, as there is normally. In those in which the sheath was not removed, there was a nearer approach to the normal, though even here the sheath was more or less adherent. In one dog in which no linen was inserted to bridge the defect and the sheath was carefully sutured over the space with catgut, there was an anatomic restoration more nearly normal than in those in which the linen was inserted. The linen seemed to act as a foreign body, causing great proliferation, evidenced grossly by the increased size of the tendon. In one dog linen was inserted high up on the tendon and carried down the outside to be inserted into the periosteum. There was great proliferation macroscopically, and microscopically many giant cells were present. In this instance there was apparently an unsuccessful attempt to absorb the linen. Linen was used in three of the animals. In two the linen was used to bridge a defect caused by the removal of a piece of tendon. In the first dog the sheath was left and sutured over the two strands of bridging linen. In the second the linen was left uncovered by the sheath, the sheath and peritendineal structures being removed along with the piece of tendon. In both there was a complete restoration of function. On dissecting the specimens only knots of the linen were found. The third dog is the one in which there was great proliferation and numerous giant cells.

### Journal of Cutaneous Diseases, New York

*March, XXXI, No. 3, pp. 145-220*

46 So-Called "Annular Syphilis" of Negro. H. H. Hazen, Washington, D. C.
47 Course Virus of Herpes Zoster Takes to Reach Nerve Ganglion. D. W. Montgomery, San Francisco.
48 Multiple Primary Carcinoid of Skin in Infant. W. Hutchinson, Montreal.

### Journal of Medical Research, Boston

*March, XXVII, No. 4, pp. 391-540*

49 *Relation of Bordet-Gengou Bacillus to Lesion of Pertussis. F. B. Mallory, A. A. Horner and F. F. Henderson, Boston.
50 *Morphologic Changes in Tissues with Change in Environment. —Changes in Gall-Bladder Following Autoplastic Transplantation into Gastro-Intestinal Tract. M. Smith, St. Louis.
51 *Morbid Histology of Cardiac Nervous Ganglia. J. McFarland and A. Anders, Philadelphia.
52 Group of Mice with Exceptional Resistance to Mouse Carcinoma. J. McFarland and G. McConnell, Philadelphia.
53 Immunizing Effect on Guinea-Pigs of Small Doses of Diphtheria Toxin. H. R. Brown, Boston.
54 *Meningitis in Infant Caused by Typhoid Bacillus. H. W. Lyall, Brooklyn.
55 Outbreak of Acute Disease in Adult Fowls, Due to Bact. Pullorum. F. S. Jones, Ithaca, N. Y.
56 Value of Macroscopic Agglutination Test in Detecting Fowls That Are Harboring Bact. Pullorum. F. S. Jones, Ithaca, N. Y.
57 *Nature of Anaphylaxis and Relations Between Anaphylaxis and Immunity. R. Weil, Ithaca, N. Y.
58 *Leukocytic Inclusions of Döhlé. W. T. Cummins, San Francisco.

**49. Bordet-Gengou Bacillus.**—The authors have already shown that the primary essential lesion of whooping-cough consists in the presence of masses of minute bacilli between the cilia of the epithelial cells lining the trachea and bronchi. Their action is chiefly mechanical: they interfere with the normal movements of the cilia by sticking them together; in this way the microorganisms furnish a continual irritation which results in the symptoms peculiar to the disease. Their next experiment was to find out if they could produce in animals the same peculiar lesion they had found in man. For this purpose a puppy was inoculated intratracheally at intervals of one week for five weeks with sputum collected from patients in the acute stage of whooping-cough. The animal was killed at the end of six weeks and the tissues fixed in Zenker's fluid. The sections showed numerous minute bacilli between the cilia of many of the epithelial cells lining the trachea. They correspond morphologically in every way with those occurring in the human tissues.

The next step was to obtain, if possible, a pure culture from a case of whooping-cough and repeat the experiment with it. Sputum was examined from thirty patients in the acute stage of the disease. The characteristic bacillus was found in all in large numbers and often in an almost pure state both free and enclosed in polymorphonuclear leukocytes and rarely between the cilia of desquamated epithelial cells. After repeated failures, pure cultures were finally obtained directly from the sputum from two different patients. A third pure culture was obtained indirectly from a puppy infected by means of sputum injected into the trachea. It was found impossible to start cultures except on the potato-blood-agar medium devised by Bordet and Gengou.

Several puppies were directly inoculated in the trachea with pure cultures. In two of the puppies the success of the inoculation was readily demonstrable in sections. The bacillus was reobtained in pure culture from one of the dogs, but not from the other. In four puppies the results were negative. The dogs in which the results were negative all came from one litter and were strong, healthy animals. The organisms were obtained in cultures, however, from the trachea or lung in each instance. Three adult monkeys (*Rhesus macacus*), inoculated intratracheally, showed no symptoms, and were therefore not killed. Infection readily took place in rabbits. In all the animals successfully inoculated the *Bacillus pertussis* was found regularly in the trachea, less often in the larger and smaller bronchi, and in four instances (all rabbits) in the nares. In all of these situations it occurred between the cilia of the lining epithelial cells. In addition it was occasionally found free in the secretion in the trachea or bronchi. Several puppies kept in the same cage with the first one inoculated with sputum acquired infection by direct contact or by contagion and showed the typical lesion in the trachea and lungs.

**50. Morphologic Changes in Tissues.**—The technic employed by Smith was that commonly used in the performance of anastomosis between the gall-bladder and intestine by the suture method. A direct implantation, however, was often supplemented by a second operation done several weeks later, which aimed at detaching the gall-bladder completely from its usual site in order to separate it from its customary nerve and blood supply. In the second operation the abdomen was again opened, the cystic duct ligated and divided, and the gall-bladder severed from its attachment to the liver. The tissues of the

fundus of the gall-bladder, now firmly united to the intestine at the point of anastomosis, obtained an entirely satisfactory blood supply from the intestinal wall. The gall-bladder was cut down to a piece corresponding to about one-third to one-half of its original size. The open end of the gall-bladder was then inverted and closed by a double layer of silk sutures, so that, when the operation was completed, a gall-bladder diverticulum was formed which communicated directly with the intestinal tract.

Smith found that autoplastic transplantation of the tissues of the gall-bladder into the gastro-intestinal tracts is followed by definite histologic changes as a result of adaptation of the transplanted tissue to new environment. Gall-bladder tissue transplanted into the gastro-intestinal tract undergoes hypertrophy of the mucosa with development of new lymphoid tissue. When transplanted into the stomach, the hypertrophy of gall-bladder mucosa may become especially marked, and be associated with active proliferation and degeneration of the transplanted cells with mucous production. The increase in lymphoid tissue developed in the gall-bladder transplanted to the surface of the intestinal tract, whereas a considerable decrease of lymphoid tissue occurs in gall-bladder transplanted into the sterile peritoneal cavity, affords evidence that the development of lymphoid tissue is in response to bacterial environment and possibly to other chemical or mechanical causes injurious to the tissue. There is no experimental evidence that a metaplasia occurs in gall-bladder tissue in fistulous communication with the intestinal tract, such as has been described as taking place in the human gall-bladder under similar conditions.

51. **Histology of Cardiac Nervous Ganglia.**—The nerve cells scattered over the surface of the human heart are said by McFarland and Anders to resemble the cells of the sensory type, and probably are a part of the sensory nervous mechanism of the heart. These cells may differ from other sensory nerve cells in that an eccentric position of the nucleus is normal to them. The nerve cells of the cardiac ganglia are very frequently diseased. The diseased cells occur in the ganglia side by side with normal nerve cells. No disturbance of the cardiac movements seem to result from the disturbance of these cells. The bradycardia in the case specially studied by the authors could not be referred to the diseased condition of the nerve cells of the cardiac ganglia.

54. **Meningitis Caused by Typhoid Bacillus.**—The case described by Lyall was one of purulent meningitis in a child 5½ months old. An organism corresponding to bacillus typhosus in its morphology, cultural characteristics and biochemical reactions, was isolated from the spinal fluid and also from the nose before death, and was obtained in pure culture from the brain, cord, spleen and heart's blood at autopsy. The usual pathologic lesions characteristic of typhoid were absent.

57. **Nature of Anaphylaxis.**—The results of Weil's experiments lead him to the conclusion that anaphylaxis is due to the reaction between specific antibodies present in the cells and the introduced antigen. In passive sensitization, the body cells absorb the introduced antibodies from the blood, and the animal is thus made anaphylactic. The function of immune bodies present in the serum is to neutralize the introduced antigen, and so to protect the body cells. The anaphylactic animal regularly contains in his circulation an insufficient quantity of antibodies to protect the body cells. The immunized animal is potentially anaphylactic. His body cells possess anchored immune bodies, but are protected by those in circulation. Exactly the same antibodies are present in anaphylaxis as in immunity. In the former they predominate in the cells—in the latter, in the serum.

58. **Leukocytic Inclusions.**—Cummins made 155 examinations of ninety-five febrile and twenty-six afebrile cases, seventeen normal individuals and sixteen laboratory animals. Among the diseases are typhoid (17 cases), scarlet fever (15 cases), tuberculosis (14 cases), croupous pneumonia (4 cases), mumps (4 cases), local suppuration (4 cases), acute bronchitis (3 cases), acute articular rheumatism (3 cases), otitis media (2 cases), syphilis (2 cases), hernia (2 cases), one each of pyemia, gangrene, glanders and epidemic meningitis. In each case 100 neutrophils were examined, except for typhoid, in which fifty cells were examined. Two to four smears were made from each patient and strained by the Giemsa as well as the Manson method. Cummins is convinced that the so-called inclusion bodies are to be found in practically all febrile diseases and that they, in some cases, persist in decreasing numbers well into convalescence; in pyogenic conditions (chronic) of afebrile character; in severe injuries without febrile disturbance and in some normal individuals. They are apparently absent in laboratory animals. A nuclear origin seems probable. The alleged specificity to scarlet fever was not corroborated.

### Journal of Nervous and Mental Disease, Lancaster, Pa.

*March, XL, No. 3, pp. 145-216*

59 Status of Apraxia with Study of a Case. (To be continued.) A. Glaserock, Washington, D. C.
60 Case of Hypoglossal Nuclei Paralysis. A. M. Moll.
61 *Occurrence of Syphilitic Organism in Brain in Paralysis. J. W. Moore, Central Islip, N. Y.

61. The same subject was discussed by Noguchi and Moore, *Jour. Experimental Medicine*, Feb. 1, 1913, and abstracted in THE JOURNAL, February 22, p. 626.

### Journal of Pharmacology and Experimental Therapeutics, Baltimore

*March, IV, No. 5, pp. 251-362*

62 Pharmacologic Action of Catha Edulis and Its Alkaloids. R. Stockman, Glasgow.
63 Chemical and Pharmacologic Properties of Hederin, a Sapo-Glucosid Contained in the Leaves of Common Ivy (Hedera Helix). B. Moore, Liverpool.
64 Epinephrin. H. McGuigan and H. T. Mostrom, Chicago.
65 Peripheral Action of Certain Drugs with Special Reference to Lungs. D. E. Jackson, St. Louis.
66 Observations on Fungi, Particularly Clitocybe Sudorifica Peck, Pholiota Autumnalis Peck and Inocybe Decipiens Bresadola. W. W. Ford and J. L. Sherrick, Baltimore.
67 *Resistance of Various Spirochetes in Cultures to Action of Chemical and Physical Agents. J. Bronfenbrenner and H. Noguchi.

67. **Resistance of Spirochetes.**—The authors found that while in a culture spirochetes remain alive at room temperature for many weeks, yet as it results at the end of twelve hours most of them are already dead. The reason for this is not the temperature, but the unfavorable conditions of experiment as: lack of nutritive substances, presence of oxygen, effect of light, the toxic effect of sodium chlorid, etc., all of which markedly diminish the viability of spirochetes. As the temperature is heightened the viability of spirochetes suffers more, as we would naturally expect and even at the end of six hours at 37 C. we already see marked differences between the tubes exposed, respectively, to room and 37 C. temperature. At the temperature of 45 C. the rate of this process increases so much that already at the end of seven minutes most, and at the end of ten minutes all of the organisms tested were dead. On the other hand, the spirochetes survive for many hours at 45 C. if they are subjected to this temperature under the favorable conditions such as are provided in the growing culture tubes, viz., strictly anaerobic conditions, properly balanced saline constituents and other nutrient substances. The toxic effect exerted by the chemicals in the experiments was from twenty to one hundred times greater if tested on spirochetes than it was against colon bacillus. The toxic effects of salvarsan were increased from two to five times and possibly more in the presence of enzymes from the liver and especially from the blood. Spirochetes suspended in physiologic salt solution are sterilized by the temperature of 45 C. in from seven to ten minutes.

### Kentucky Medical Journal, Bowling Green

*March 15, XI, No. 6, pp. 233-266*

68 Have We a Trachoma Problem? C. T. Wolfe, Louisville.
69 Eclampsia. E. Speidel, Louisville.
70 Hay Fever. D. H. H. Wolfe, Louisville.
71 Four Cases of Appendicitis Associated with Foreign Bodies (Coal, Grape Seed, Oxyuris, Bismuth). J. W. Price, Louisville.

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72 Three Cases of Imperforate Anus. G. P. Grigsby, Louisville.
73 Radiographic Plates Showing Malposition of Stomach and Large Intestine. D. Y. Keith, Louisville.
74 Suprapubic Cystotomy. C. G. Forsee, Louisville.
75 What Does the Cystoscope Reveal? G. H. Day, Louisville.
76 Separation of Symphysis During Delivery. H. E. Tuley, Louisville.
77 Morovan's Disease. M. L. Ravitch, Louisville.
78 Case of Pellagra. M. L. Ravitch, Louisville.
79 Management of Compound Fractures. A. D. Willmoth, Louisville.

### Kansas Medical Society Journal, Kansas City

*March, XIII, No. 3, pp. 95-138*

80 Wassermann Reaction in Relation to Diagnosis and Treatment of Syphilis. L. S. Milne, Rosedale.
81 Etiology of Eclampsia. L. V. Sams, Topeka.
82 Diagnosis and Treatment of Extrauterine Pregnancy. J. C. McGee, Leavenworth.

### Medical Record, New York

*March 29, LXXXIII, No. 13, pp. 553-598*

83 Occurrence of Dextrorotatory Albumins in Organic Nature. J. Beard, Edinburgh, Scotland.
84 Action and Administration of Crotalin in Pulmonary Tuberculosis and in Epilepsy. T. J. Mays, Philadelphia.
85 Menace of "Recovered" Insane. E. H. Williams and J. S. Brown, Montclair, N. J.
86 Differential Diagnosis Between Pneumonia and Appendicitis. G. F. Boehme, Jr., New York.
87 Brief Comparison Between Hospital Service in Germany and That in United States; with Reference to Requirements for Medical Practice. H. J. Boldt, New York.
88 Treatment of Erysipelas in Infants by Means of Vaccines. E. M. Sill, New York.

### Military Surgeon, Washington, D. C.

*March, XXXII, No. 3, pp. 221-324*

89 Evolution of Ambulance Corps and Field Hospital. L. C. Duncan, U. S. Army.
90 Typhoid Prophylaxis in British Army in India and in American Army in United States. A. G. Love, U. S. Army.
91 New York Division, M. R. C., U. S. Army. H. S. Baketel, New York.

### New York Medical Journal

*March 29, XCVII, No. 13, pp. 633-688*

92 Massive Doses of Roentgen-Ray in Epithelioma. G. M. MacKee and J. Remer, New York.
93 *Hospital Morbidity Statistics. C. F. Bolduan, New York.
94 Suprapubic Cystostomy. C. G. Cumston, Boston.
95 Improved Roentgen-Ray Generator. S. Tousey, New York.
96 Extract of Adrenals. J. Aikman, Rochester, N. Y.
97 Chronic Seminal Vesiculitis. A. Hyman and A. S. Sanders, New York.
98 Newer Teachings of Diseases of Gastro-Intestinal Canal: Examination of Chyme. M. I. Knapp, New York.
99 Dreaming and Dreams. G. Drenford and L. K. Hirshberg, Baltimore.
100 Hyperidrosis; Etiology and Treatment. H. G. Werthcimer, Pittsburgh.
101 Plea for More Expert Anesthetists. M. Lavandera, New York.
102 Prevention of Otitis Media. M. Lubman, New York.
103 *Ten Cases of Goiter. J. J. Gilbride, Philadelphia.
104 Salvarsan in Asthma. L. E. Glasgow, Pittsburgh.

93. **Hospital Morbidity Statistics.**—A practicable method of making hospital morbidity statistics uniform and preparing them for analytic study is presented by Bolduan. The basis of the system proposed is the "Discharge Certificate," a form of report very similar to the ordinary death certificate. These discharge certificates would be supplied to all the cooperating hospitals, and for each patient discharged from a hospital, a discharge certificate, properly filled out and signed, would be sent by the hospital to a central recording bureau. The discharge certificates contain the ordinary data concerning the sex, age, race, nationality, social condition, occupation and residence of the patient, and then certain data pertaining to the patient's admission, stay in, and discharge from the hospital, the disease and its complications, etc. At the central recording bureau each certificate is looked over by a trained physician registrar, who indicates on each certificate the correct designation, in the standard nomenclature, under which the certificate is to be classified. It then passes to a tabulating clerk, who transfers, by means of punch holes, all the information on each certificate to a correspondingly numbered tabulating card. These cards are specially prepared to fit machines which sort and count the cards into any desired groups. In order to give an idea as to the utility of such tabulations, and the light they would shed on hospital practice and hospital administration, a number of specimen tables are presented.

103. **Cases of Goiter.**—The ten cases of goiter reported on by Gilbride represent six cases of exophthalmic goiter and four cases of simple goiter. The cultures and stained sections of all of these cases were negative, with the exception of the culture made from one case of exophthalmic goiter which gave a growth of *Micrococcus tetragenus*. In a series of fourteen cases reported by Gilbride previously (THE JOURNAL, Dec. 16, 1911, p. 1988), there were six cases of exophthalmic goiter and eight cases of cystic goiter. A growth was obtained by culture in two cases. One case of exophthalmic goiter gave a growth of *Micrococcus tetragenus*, and a growth of *Streptococcus vermiformis* of Sternberg was obtained from one case of cystic goiter.

### Old Dominion Journal of Medicine and Surgery, Richmond, Va.

*March, XVI, No. 3, pp. 97-150*

105 Nature of Malignant Tumors. A. G. Brenizer, Charlotte, N. C.
106 Principles of Serum Therapy. I. Battle, Rocky Mount, N. C.
107 Ligation of Superior Thyroid for Goiter Under Local Anesthesia, with Report of Case. L. Watson, Oklahoma City.

### New Jersey Medical Society Journal, Orange

*March, IX, No. 10, pp. 391-344*

108 Indurative Headache. C. C. Belling, Newark.
109 Phthisiophobia. T. W. Orange
110 Cholecystic vs. Duodenal and Duodenal Versus Cholecystic Disease. J. B. Deaver, Philadelphia.
111 Ethical Problems Confronting Eye, Ear, Nose and Throat Specialist. L. Emerson, Orange.
112 Diagnosis of Incipient Pulmonary Tuberculosis. C. V. R. Bumsted, Newark.

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## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Children's Diseases, London

*March, X, No. 111, pp. 97-144*

1 *Multiple Calcification ("Calcinosis") in Subcutaneous Tissue. F. P. Weber.
2 Subaortic Stenosis. H. Thursfield and H. W. Scott.
3 Case of Patent Ductus Arteriosis. R. Miller and G. H. Orton.

1. **Multiple Calcification in Subcutaneous Tissue.**—Weber's patient, aged 7 years, was admitted to the hospital on account of the presence of a large number of hard nodules in the subcutaneous tissue of the extremities and the portions of the trunk adjoining the extremities. Most of the nodules were smaller than an average pea, but some of them, especially those on the buttocks and about the knees, were much larger, the larger nodules having apparently arisen by the coalescence of several smaller nodules. The face, head, thorax and abdomen were practically free. On the child's admission to the hospital the skin over one of the nodules was ulcerated, and the skin was inflamed and adherent over one or two others, but the nodules, as a rule, gave rise to no pain or tenderness, and seemed to have developed without the child being aware of their existence. The lymph-nodes in the groins and right axilla, and some in the neck, were moderately enlarged. The liver and spleen could not be felt, and the child seemed to be free from any visceral disease. The urine contained no albumin or sugar. There was no fever. The presence of hard subcutaneous nodules was first noticed twelve months before the patient's admission to the hospital, and since these were detected many others had appeared. One little nodule near the right knee became very prominent and discharged spontaneously six weeks before admission. In regard to the patient's past history, she is said to have been subject to skin eruptions, but the chief point is that in November, 1909, she was under treatment at a fever hospital for scarlet fever, and that from that time to August, 1910, she suffered successively from diphtheria, paresis of the lower extremities (diphtheritic paralysis?), a skin eruption somewhat resembling lichen ruber, pneumonia, an abscess in the right axilla and an abscess at the back of the neck, a corneal ulcer (marantic?) of the left eye, and left-sided

otorrhea. The corneal ulcer perforated (giving rise to considerable prolapse of the iris), but ultimately healed up again. During the latter period of this succession of illnesses the patient was in the hospital. She left the hospital on Aug. 1, 1910, but was readmitted in September of the same year for temporary fever of uncertain origin. Since that time the child's condition seems to have remained satisfactory until the appearance of the subcutaneous nodules first attracted the parents' attention about August, 1911. That the subcutaneous nodules consist largely of calcareous material has been proved both by Roentgen-ray examination and by chemical analysis. The nodules occasionally become inflamed and softened, the skin over them becomes adherent, and if left to themselves thin purulent matter mixed with calcareous debris would be discharged.

## British Medical Journal, London

*March 15, I, No. 2724, pp. 537-592*

4 *Alimentary Toxemia. W. H. White.
5 *Bacteriology of Alimentary Canal. F. W. Andrewes.
6 *Alimentary Toxemia: Its Symptoms and Treatment. R. Saundby.
7 Idem: Consequences and Treatment from Surgical Point of View. W. A. Lane.
8 Death by Electric Currents and Lightning. A. J. Jex-Blake.
9 Necessity of Recognizing Midwifery as Branch of Surgery. V. Bonney.

4. Also published in *The Lancet*.

5. **Bacteriology of Alimentary Canal.**—As to the part played by bacteria in alimentary toxemia, it seems to Andrewes reasonable to lay down the following propositions: In an important group of cases the poisoning is by foreign proteins, as such, the defect lying in the liver, which ought to shield the body from their effects. With this, bacteria have, as a rule, nothing to do. The main effect of bacterial activity in the production of alimentary toxemia lies in their ability to carry out protein cleavages beyond the capacity of the ordinary digestive ferments, with the formation of products which, when in excess, the body is unable to neutralize. There is at present little evidence that true toxins, derived from the ordinary flora of the gut, soluble or intracellular, play much part in alimentary toxemia.

6. **Symptoms and Treatment of Alimentary Toxemia.**—Under physiologic conditions, Saundby says, the natural protective agencies in the alimentary system are sufficient to shield the body from the dangers of poisons formed therein or of those introduced with the food, provided that these are not in overwhelming amount. Infrequent or incomplete evacuation of the colon is not in itself a cause of disease. Such morbid symptoms as arise result from a breakdown in the protective machinery, in consequence of functional defects or pathologic changes in the organs concerned. Wholesome food in reasonable quantities may consist of animal or vegetable protein, carbohydrates and fat in due proportion, and the evidence does not justify the entire exclusion of animal protein, as being directly or indirectly the cause of toxemia. When toxemia is present treatment should be based on the principles of eliminating the poison already present, preventing any further introduction and reinforcing the natural protective agencies. Where there is extensive disease of the wall of the colon the exclusion or removal of this organ is a justifiable proceeding after a reasonable trial has been given to medical methods.

## Edinburgh Medical Journal

*March, X, No. 3, pp. 193-288*

10 Inquiry into Outbreaks of Febrile Illness, with Rapidly Fatal Cases, Occurring in Boys' Industrial School Near Edinburgh. C. McNeil and J. P. McGowan.
11 *Carcinoma of Stomach; Analysis of 200 Cases. J. Langwill.

11. **Carcinoma of Stomach.**—Langwill summarizes his study of 200 cases as follows: Gastric cancer is probably the commonest form of malignant growth occurring in males. Perhaps with the exception of the uterus and breast, it is also the most common form of malignant growth in females. It is all-important therefore that greater attention should be given to its early recognition. Females are far more frequently affected than text-books would lead one to imagine. Gastric cancer is not so much a disease of middle age as one would be led to believe, a marked percentage of cases occurring under 40. The prevalence of the belief that it is a disease of middle age has often led to disastrous results in the diagnosis of the disease under 40. Heredity, in some cases, plays an important rôle in etiology. When present, it is usually markedly so.

All cases of gastric ulcer, healed or unhealed, are potential carcinomas. Alcohol, by acting as an irritant, may cause ulceration and, later, carcinoma, or it may cause carcinoma directly. Oral sepsis and carious teeth probably are important factors also. "Pyloric" carcinomas are more common than "gastric." As a rule, the former give more definite signs. They should accordingly be more easily diagnosed, and as they lend themselves more readily to excision, operative results should be brighter. Gastric disturbance in a person of over 45 should always arouse suspicion and be considered seriously. Unless definite improvement occurs in three or four weeks under medical treatment, such cases should be dealt with surgically. Systematic weighing in all gastric cases should be more commonly practiced, carcinoma being marked by a steady decrease in body-weight.

Anemia being marked in most cases only toward the close, blood examination is probably useless as a help to early diagnosis. Like anemia, subnormal temperature also is probably a late occurrence. Constipation is a marked feature in practically every case of carcinoma of the stomach. But its occurrence is so common, even in health, that it must only be awarded secondary consideration. Anorexia as a symptom is of the greatest importance—especially if occurring in a person over 45 previously healthy—all the more so if it be accompanied by a feeling of load or weight in the epigastrium after food, by eructations, water-brash and heartburn. Vomiting and hemorrhages as symptoms are too often late occurrences to be of value in diagnosis in the early stages. Pain is an almost invariable early symptom. Examination of test-meals should be more commonly performed. On the results obtained, however, reliance can be placed only in the late stages. In the early stages they may support a doubtful diagnosis. Careful abdominal examination is essential. It must be performed leisurely and frequently repeated. The presence of a tumor above the umbilicus should be a signal for immediate action, provided the bowels have been cleared out, and a splenic or hepatic origin excluded.

Scientific tests should be more generally resorted to. The disease, however, first comes under the notice of the ordinary practitioner, who, in many cases, unfortunately lacks both the time and the facilities for the necessary investigations. In most cases scientific tests are applied and results drawn therefrom only when the disease is clinically almost unmistakable. Cases in the past have been sent to the surgeon much too late—a fact clearly brought out by the relatively small number in which a radical operation was possible.

The only cure at present is a surgical one, and the mere prolongation of life is possible only through surgical intervention. All cases of doubtful gastric disorder, therefore, should be submitted to a careful examination, first without and later (if necessary) under a general anesthetic. This applies both to chronic cases and to cases occurring in persons over 45 with a previously clean gastric history. If, thereafter, doubt exists, the situation being clearly and definitely described to the patient and his friends, a surgeon should be consulted. With the surgeon eventually must the issue lie. Only by the collaboration of physician and surgeon will an early diagnosis be arrived at, and a consequent radical treatment be rendered possible.

## Glasgow Medical Journal

*March, LXXIX, No. 3, pp. 161-249*

12 *Two Unusual Forms of Spina Bifida. G. H. Edington.
13 Sporadic Congenital Deafness and Deafness from Syphilis. J. K. Love.

12. **Two Unusual Forms of Spina Bifida.**—The cases reported by Edington are: (1) Spina bifida occulta in upper cervical region with irregular formation of laminae and a large mass of fat covering the vertebral defect. (2) Lumbosacral spina

bifida, presenting large unilateral swelling in right gluteal region and deformity of corresponding lower limb.

### Journal of Tropical Medicine and Hygiene, London

*March 1, XVI, No. 5, pp. 65-80*

14 Climate and Other Factors in Relation to Health of Europeans in China. J. G. Cormack.
15 Tropical Diseases in Tripoli. U. Gabbi.
16 Intestinal Parasites in Costa Rica. S. C. Jamison.

### Lancet, London

*March 15, I, No. 4672, pp. 737-802*

17 Surgery of Thyroid, with Special Reference to Exophthalmic Goiter. J. Berry.
18 Alimentary Toxemia. W. H. White.
19 *Etiology of Cysts Connected with Hernia Sacs. R. W. Murray.
20 Static Cyclophoria. A. A. Bradburne.
21 *Treatment of Carbuncles, Boils, Staphylococcic and Streptococcic Infections by Internal Administration of Dilute Sulphuric Acid B. P. J. Reynolds and R. J. Reynolds.
22 *Tuberculin Treatment of Pulmonary Tuberculosis. N. D. Bardswell.
23 Some Anatomic Considerations of Disposition of Sciatic Nerve and Femoral Artery. F. Wood-Jones.
24 Retained Placenta of Extra-Uterine Pregnancy. J. Alkman.
25 Case of Gangrene of Leg in Infant 11 Days Old; Amputation; Recovery. D. C. L. Fitzwilliams and W. H. Vincent.

19. **Etiology of Cysts Connected with Hernia Sacs.**—A young man suffering with a "hydrocele of the cord" presented himself to Murray. At the operation a small hernia sac was found, and connected with the fundus of the sac were two patent funicular processes, each of which opened into the sac. At the blind end of the shorter process was a tense cyst, 1 inch in length which contained clear fluid. The longer process had a uniform lumen and passed downward behind the cyst, to which it was intimately adherent. The lower end of this process was connected with the tunica vaginalis by a fibrous cord, so that it undoubtedly was the remains of the true processus vaginalis testis. A second case was that of an adult male, who was admitted to hospital for the cure of a scrotal hernia which had existed for many years and could not be reduced satisfactorily. At the operation a large cyst, which contained clear fluid, was found lying on and intimately adherent to the anterior surface of the sac wall. Murray submits that as the gubernaculum is undoubtedly responsible for the presence of the peritoneal diverticulum known as the processus vaginalis testis, circumstantial evidence is strongly in favor of the view that if this process is found to be duplicated then this second diverticulum must be due to a duplication of the force which produced the first. If this premise be correct then the subsequent irregular obliteration of these processes, Murray believes, clearly accounts for the anomalous conditions described.

21. **Sulphuric Acid for Carbuncles, Etc.**—The treatment used by the Reynoldses in these cases consisted in administering internally dilute sulphuric acid B.P. in 20- or 30-minim doses, each dose diluted with 2 ounces of water, every four hours. In the case of carbuncle treated by this drug in large doses (small doses are not of the slightest use), changes are observed to take place in the following order: First, within twenty-four hours the infiltrated area of tissue becomes strictly circumscribed; then the slough is observed to soften; during the next few days pus is freely discharged, and the whole affected area shrinks and healthy granulation tissue forms, filling up the cavity until the part is healed. The cicatrization takes place in a comparatively short time from the commencement of the treatment, the period varying, of course, with the size of the lesion. The only external application is a dressing of phenolized petrolatum (1 in 20).

In cases of what would appear to be streptococcic infection, such as those resulting from abrasions or punctures by bones of high game, or inoculation by decomposing animal matter, the patient showing early symptoms of septicemia, a somewhat different though favorable course obtains; the high temperature is quickly reduced and the pain and swelling and malaise gradually subside, the patient progressing uninterruptedly toward convalescence. Where the lymphatics are inflamed and the glands enlarged and painful these conditions in a few days also disappear.

The authors have treated in the same way a very large number of patients— e. g., blind boils, which are aborted and completely disappear. Recurrent crops of boils and pimples in different parts of the body and severe cases of acne have yielded readily. In one case in particular, in which the patient developed recurrent crops of boils, the drinking-water was found to be taken from a very foul cistern with dead animal and vegetable matter covering the bottom. This remedy proving so effectual in such classes of cases, they were led to try its effect on other conditions where pyogenic organisms were responsible for some of the symptoms observed. Cases of bronchiectasis and pulmonary tuberculosis, in which there is so often a staphylococcic infection, were benefited; the sputum becomes less purulent and much less in quantity, and in tuberculous cases the fluctuations of temperature are less.

22. **Treatment of Pulmonary Tuberculosis.**—Bardswell recommends the tuberculin treatment and cites the records of patients treated at the King Edward VII Sanitarium.

### Annales de Médecine et Chirurgie Infantiles, Paris

*January 1, XVII, No. 1, pp. 1-32*

26 Treatment of Tuberculosis in Children on the Mediterranean Coast. L. Revillet.
27 Direct Sunlight in Treatment of Tuberculous Peritonitis; Rapid Cure in Three Cases. D'Oelsnitz.
28 Modification of Abbott's Method of Treating Scoliosis. Q. Calve and L. Lamy.

*January 15, No. 2, pp. 33-64*

29 Vomica in Children. Maillet and Aime.
30 Diagnostic Importance of Manner of Children's Crying. (Le diagnostic du "cri" chez l'enfant.) R. Saint-Philippe.
31 Radioscopy in Diagnosis of Infants' Diseases. (Applications de la radiologie à l'étude des maladies du nourrisson.) G. Variot.
32 General Principles for Treatment of Tuberculous Spondylitis. (Considérations sur le mal de Pott.) Froelich.

*February 15, No. 4, pp. 97-128*

33 Fascia Graft to Correct Spina Bifida. (La greffe aponeurotique libre dans l'opération du spina bifida.) G. Flèri.
34 Gastro-Enterostomy on Thirteen-Day Infant. (Sténose hypertrophiante du foie chez un nourrisson. Gastroentérostomie. Guérison.) Fredet and L. Tixier.
35 Pulmonary Complications of Scarlet Fever. Two Cases. R. Porak.

*March 1, No. 5, pp. 129-164*

36 *The Alimentary Saccharose Test for Infants. (L'épreuve de la saccharosurie alimentaire chez le nourrisson.) Gaujoux.
37 Chronic Appendicitis in Children. P. Lereboullet.
38 Inefficiency of Serotherapy by the Rectum. E. Lesné and L. Dreyfus.

36. **Saccharose Test for Infants.**—Gaujoux summarizes forty-eight cases in which he applied the alimentary saccharosuria test. The results show that when saccharose appears in the urine after ingestion of less than 2 gm. per kilogram of weight, there is reason to assume insufficient functioning on the part of the liver or intestines or both, and the prognosis should be guarded. The test was made with ordinary simple syrup containing 50 per cent. saccharose.

### Archives des Maladies du Cœur, etc., Paris

*March, VI, No. 3, pp. 161-224*

39 The Intersystole in Man. (L'intersystole chez l'homme. Démonstration clinique de son existence chez l'homme et du mécanisme de la fermeture des valvules auriculo-ventriculaires.) G. Etienne.
40 Sudden Death in Perpetual Arhythmia. (La mort subite dans l'arythmie complète.) J. Heitz and G. Clarac.
41 Case of Anemic Diastolic Murmur at Base of Heart. Bouchut and Mazel.
42 Lymphoid Leukemia in Cattle. (La lencémie lymphoïde chez les bovidés.) C. Aubertin and T. Morel.
43 *Arterial Pressure During Digestion. M. Loeper.

*April, No. 4, pp. 225-304*

44 Alternating Rhythm After Extrasystole. (Alternance du pouls révélée à la suite d'une extrasystole. Sa valeur pronostique.) J. Heitz.
45 Atypical Chloroma. (Etude clinique hématologique et anatomique d'un cas de chlorome atypique.) Pissavy and C. Richet, Jr.

43. **The Arterial Pressure During Digestion.**—In the three normal persons examined the arterial pressure rose after a meal but then, after from fifteen to forty-five minutes, it

dropped to below normal. Then the pressure rose again and ran up higher than normal by the third hour. He analyzes the different elements of the food liable to be responsible for these fluctuations. The initial hypertension seems to be due exclusively to the distention of the stomach, and it is more marked the larger the amount eaten and drank. The secondary hypotension corresponds to the phase of gastric secretion; the hypotension thus is more marked after foods that stimulate gastric secretion, strongest with salt and meat, weakest with milk, briefly transient with water and macaroni. The secondary hypertension corresponds to the distention of the intestine and the plethora in the blood. It is proportional to these, to their irritating action on the vessels and the rapidity of their elimination. The above facts demonstrate the necessity for avoiding large meals and ingesting much liquid when the arterial pressure is already considerable. Another lesson taught is that the secretion of hydrochloric acid should be reduced as much as possible. The third practical conclusion is that salty foods, alcohols and all stimulants should be avoided by such patients, especially by those with atheroma or chronic kidney disease. In this group the phase of tardy hypertension is particularly pronounced.

### Archives des Maladies de l'App. Digestif, Paris

*February, VII, No. 2, pp. 61-120*

46 *Operative Treatment of Gastric Cancer; Sixty-Nine Cases. G. Faroy.
47 *Diabetes in Course of Acute Partial Pancreatitis. Norero.
48 Acute Infectious Colitis in Adults. A. Cade.

46. **Gastric Cancer.**—Faroy has reexamined recently sixty-nine patients given operative treatment before 1907 for malignant gastric disease. Although none seemed radically cured by the operation yet long survival was realized in a number of cases, the patients living three or four years afterward in fair condition. This occurred in 66 per cent. of the nineteen cases of malignant degeneration of a gastric cancer. The cancer can develop only slowly in old ulcer tissue. The outcome was less favorable in the cases without a history of a gastric ulcer; only 33 per cent. in this group survived for more than a year.

47. **Diabetes from Pancreatitis.**—Diabetes developed in the course of an acute destructive inflammatory affection of the pancreas in a man of 41, a hard drinker. Necropsy showed old cirrhosis of the liver and pancreas, but the glycosuria had come on only after the acute hemorrhagic pancreatitis had developed. It proved fatal. Norero compares the case with similar ones on record, emphasizing that even for the milder forms of diabetes some pancreatic derangement may often be incriminated.

### Archives de Médecine des Enfants, Paris

*March, XVI, No. 3, pp. 161-240*

49 Acute Colitis in Children. V. Hutinel and P. Nobécourt. To be continued.
50 Chlorotic Type of Anemia in Children. M. de Blebler.
51 Sarcoma of Ovary in Infant. A. Lesage and Girault.

### Journal de Médecine de Bordeaux

*March 2, XLIII, No. 9, pp. 129-144*

52 The Part Played by the Lipoids in Biology and Therapeutics. P. Mauriac.
53 Complex Aphasia and Parietal Syndrome with Necropsy. H. Verger and Desqueyroux.

### Lyon Chirurgical, Lyons

*March, IX, No. 3, pp. 233-350*

54 *Malignant Chorio-Epithelioma; Six Cases. A. Pollosson and H. Violet.
55 *Combined Operation for Cancer of the Rectum. (Résultats immédiats et éloignés de l'opération combinée dans le cancer du rectum.) A. Chalier and E. Perrin. Commenced in No. 2.
56 Palliative Operations for Cancer of Lower Bowel. (De l'insuffisance de l'anus caecal pour assurer en permanence la vidange du gros intestin dans les cancers occlusifs du rectum et de l'S iliaque.) H. Muller.
57 *Operative Treatment of Gastric Crises. (A propos des opérations rachidiennes chez les tabétiques.) J. A. Sicard. (L'opération de Franke et l'opération de Foerster dans les crises viscérales du tabes.) R. Leriche.

54. **Chorio-Epithelioma.**—Pollosson and Violet have encountered six cases in the last three years and report them in detail. These are the first that have been noted at Lyons since 1894. This malignant growth never occurs without a preceding pregnancy, usually a mole pregnancy. It spreads exclusively by way of the blood-vessels, the veins; the lymphatics are rarely if ever invaded. Metastases are frequent, especially in the lungs, but they have also been encountered in the spleen, liver, kidney, brain and vagina. In one of their cases a nodule in the vagina first cleared up the diagnosis. In some cases the symptoms from the metastasis were the first to be noted. Hemoptysis, pulmonary symptoms, uncontrollable vomiting, mental derangement, hemiplegia—these have been observed from the metastasis when there were no symptoms on the part of the uterus. Phenomena of this kind after a childbirth, miscarriage or mole should suggest the possibility of a chorio-epithelioma with early metastasis. In the majority of cases, however, hemorrhage is the first symptom. If microscopic examination is not made, the chorio-epithelioma is liable to escape detection or it may be taken for a simple polyp. The prompt recurrence of the polyp is typical but if the patient is not seen by the same medical attendant each time the new polyp may be ascribed to an incomplete exploration at the other times. In one of the cases reported, the supposed placental polyp recurred three times in the course of three months. Treatment can be only operative, preferably by abdominal hysterectomy; in one of the cases reported two metastatic nodules were found in the ligaments. Of the five patients operated on, all are living, one after five years, the others after three and four and one after twenty years. Four of the patients were between 22 and 29 and all but one had borne one child before; another was 50, a vii-para, and one 43, a iii-para.

55. **Cancer of the Rectum.**—Chalier and Perrin state that the mortality of the combined operation for cancer of the rectum in 208 cases they have compiled from sixteen clinics, has ranged from 16.66 to 69.23 per cent. The larger size of the female pelvis renders the outlook for women better both at the time and later. The principal complication is from infection, and the progress of technic will improve conditions in this respect. Of 125 patients followed to date, 16.8 per cent. have been permanently cured for over three years (15 of 55 women; 6 of 68 men). The combined operation was followed by recurrence in only 19.48 per cent. of 77 patients traced for more than three months. This is a much better showing than with other methods. Goullioud has reported a recurrence after more than five years, and Rotter after over three years. In the six known cases of metastasis, it was in the liver in three, the lung or brain in the others. In all the cases in which the sphincter was preserved there were no functional disturbances, not even when the coccyx and last sacral vertebra had been sacrificed.

57. **Operative Treatment of Gastric Crises.**—Sicard declares that Franke's operation is illogical because it does not really act on the spinal ganglion nor on the posterior roots, while it becomes dangerous if we attempt to extract the ganglion by the external route. Guleke's operation permits escape of the spinal fluid and possibility of infection of the meninges. The operation Sicard here advocates anew seems to him superior to other technics for various reasons. He ligates in the epidural space the posterior and anterior roots together, after which they are severed, with or without removing the ganglion at the same time.

Leriche has applied Franke's operation in five cases and found it entirely harmless when properly done while it is not illogical and it may answer the purpose, but its lack of precision is a drawback. The method may be indicated in the debilitated, but under other conditions he advocates intradural severing of the roots. He has done this extradural in four cases, twice in tabetics, once for Parkinson's disease and once for zona. He severed in these four operations twenty-three of the posterior roots; the operation was simple and easy in one case but in the others it caused severe hemorrhage, interfering with the operation and liable to permit infection of the

meninges. Since then he does the operation intradural and regards this an improvement in the technic.

### Presse Médicale, Paris

*March 1, XXI, No. 18, pp. 165-176*

58 Family of Dwarfs from Defective Development of Cartilage. (Nanisme familial. Mésomélie et brachymélie métapodiale symétrique.) Bertolotti.
59 *Technic for Injection of Neosalvarsan. P. Ravaut.

*March 5, No. 19, pp. 177-184*

60 Technic for Subcutaneous Injection of Quinin. G. H. Lemoine.
61 Toxic Action of Glandular Secretions as Factor in Syndrome of Ileus. H. de Gaulejac.

*March 8, No. 20, pp. 185-196*

62 Arrest of Development Limited to the Skull and Scalp. E. Bonnaire and G. Durante.
63 *Simple Serum from Animals in Surgery and Therapeutics. H. Nolhia.

59. **Technic for Injection of Neosalvarsan.**—Ravaut states that sodium chlorid acts on this drug and consequently should not be injected with it. If a little neosalvarsan is dissolved in plain distilled water and other specimens in salt solutions of varying strengths, the solution with distilled water alone will remain permanently limpid while the solutions with salt will grow turbid in twenty-four hours. He consequently avoids the use of sodium chlorid, and has found that the drug will not lake the blood-vessels if it is in a concentration of 10 c.c. of distilled water for 0.45 or 0.60 gm. of neosalvarsan, or in 15 c.c. of distilled water to 0.75 and 0.9 gm. of the drug. These proportions have been tentatively arrived at and have been found the best for intravenous injection of neosalvarsan in his experience. He commences with the smallest dose, increasing to the largest mentioned above. The injections are made at eight-day intervals. Some of his patients were given up to six injections in the same vein but no induration followed.

63. **Simple Serum in Treatment.**—Nolhia reviews the history of the use of non-specific simple serum from animals to combat hemorrhage and infections, both by local application and by subcutaneous or intravenous injection. It favors the coagulation of the blood, stimulates the leukocytes and promotes their diapedesis while it has a bactericidal action. R. Petit asserts that it is not necessary for the serum to be fresh for local application, and that heating it to 56 C. suspends certain qualities which might be injurious. It can be used in the form of a dry powder, dissolving it when needed in ten times its weight of physiologic salt solution. In this form it seems to be particularly useful for burns after they have been cleansed, rinsed with hydrogen dioxid and then with boiled saline. The burned region is then covered with several thicknesses of gauze dipped in horse-serum, heated; over this two or three compresses moistened with saline, then oiled silk and cotton. This dressing is changed at first every twenty-four hours. The oiled silk can be discarded if the epidermis becomes macerated. Later the serum is replaced by dusting with desiccated serum. In treatment of hemorrhage, the desiccated serum is particularly useful for all except hemorrhages from injury of an artery. In treatment of hemorrhage by subcutaneous or intravenous injection, the serum must be fresh, not heated. There is no fear of trouble at the first injection or soon after, but if there has been an interval of fifteen days it is better to test the sensitiveness by a tentative injection of 1 or 2 c.c., or 5 c.c. at most, in the loose cellular tissue, extremely slowly. If the patient shows the least disturbance from this, nausea, distress, more rapid pulse or lipothymia, it is better to refrain from the injection. The fear of anaphylaxis imposes great caution in injecting fresh serum for its hemostatic action, especially in hemophilia. Weil, who has made a special study of this subject, found that human serum, horse, rabbit and beef serum were equally effectual in this line, but that beef serum sometimes induces briefly transient accidents. Antitoxin might be used if quite fresh, but simple serum answers the purpose. Hemopoietic serum is especially useful in the anemia following severe hemorrhage; this is serum taken from animals after repeated venesection, their blood being thus in active regeneration. (See Editorial in THE JOURNAL, Oct. 26, 1912, p. 1549.)

### Semaine Médicale, Paris

*March 12, XXXIII, No. 11, pp. 121-132*

64 Treatment of Fracture of the Patella. F. Lejars.

### Beiträge zur Geburtshilfe und Gynækologie, Leipsic

*XVIII, No. 1, pp. 1-162. Last indexed Nov. 23, 1912, p. 1926*

65 *Removal of Cerebellum in Case of Congenital Occipital Hydrencephalocele. R. Mees.
66 Symptomatology of Rachitis and Osteomalacia in Japan. M. Ogata.
67 Double Monster. (Dicephalus tribrachius.) A. Hajoerle.
68 Unusual Forms of Contracted Pelvis. (Einige seltene Formen von engem Becken.) A. Mayer.
69 Active Measures in Febrile and Septic Abortion. Y. Kasashima.
70 "Twilight Sleep" in General Anesthesia. (Ueber den Pantopon-Scopolamindämmerschlaf.) Y. Kasashima.
71 The Solidity and Elasticity of the Abdomen. (Aggregatzustand—Elastizität und Festigkeit des Bauches.) H. Sellheim.
72 Gynecology and Psychiatry. (Eierstocks-Uteruskrankheiten und Psychopathien.) L. M. Bossi.

65. **Removal of Cerebellum.**—The tumor at the back of the head was as large as the head itself but the child was apparently normal otherwise. The second day after birth the hydromeningocele was removed and with it the cerebellum and vermiform appendix which projected into the tumor and had evidently suffered from the compression to such an extent as to render recuperation impossible. The floor of the fourth ventricle was exposed by the operation. The child nursed vigorously after the operation and did not seem much the worse for it. The temperature ran up to 40.5 C. several times in the first three days but then dropped to normal. The infant vomited twice the third and fourth days and for twelve days in the eighth and ninth weeks. Other disturbances attributable to the loss of the cerebellum are nystagmus, lack of corneal reflex action and a tendency to hypertonicity of the legs. Recurring hydrocephalus required tapping four times, but this has not been necessary since for nine months. The child is developing slowly; it cannot sit up nor stand yet at the age of 15 months. Mees has found seventy-five cases of occipital encephalocele on record. The list includes four with hernia of cerebellum, all cured by operative treatment. In eight cases no operation was attempted and the children all died. In nine cases the children were born dead. In fourteen cases the encephalocele contained other parts of the brain.

### Berliner klinische Wochenschrift

*March 3, L, No. 9, pp. 381-428*

73 *Operative Treatment of Nephritis. (Beitrag zur Chirurgie der Nephritiden.) A. Pousson.
74 *The Kidneys in Eclampsia. (Ueber die Schädigung der Niere bei der Eklampsie.) A. Zinsser.
75 *Resection of Stomach; 157 Cases. S. Weil.
76 *Influence of Sequestration of Venous Blood on the Pulse in Heart Disease. (Demonstration der Wirkung der Venenstauung auf die Pulskurven Herzkranker.) C. S. Engel.
77 *Coagulation by Electricity as Adjuvant in Operative Treatment of Cancer. (Die Elektrocoagulation bei der chirurgischen Behandlung des Krebses, speziell des Gebärmutterkrebses.) Abel.
78 Chemical Action of Thorium X on Organic Substances, Especially Uric Acid. W. Falta and L. Zehner.
79 The Active Principle in the Biochemical Reaction to Radiotherapy. G. Schwarz.
80 Internal Secretion and the Nervous System. A. Münzer. Commenced in No. 7.
81 To Improve Instruction in Midwifery. (Vorschläge zur Verbesserung des neuen preussischen Hebammenlehrbuchs.) C. Holste.

73. **Operative Treatment of Nephritis.**—Pousson used to teach that operative treatment of acute toxic nephritis could not benefit on account of the rapid destruction of epithelium, but recent experimental research has converted him to the view that decapsulation and nephrotomy may alter conditions to such an extent that the still intact elements may proliferate and vicariously substitute the destroyed patches. In twenty-six cases of acute nephritis there was no mortality in the group of eleven in which the disease had not reached the phase of suppuration; in the other fifteen there were two operative and two later fatalities. The intensity of the fever and impairment of the general condition are direct indications for

operative measures when with oliguria there is much albuminuria and numerous leukocytes and casts in the urine. For acute nephritis as well as for the chronic he advises nephrotomy. This relieves the pressure inside the organ from the proliferation processes in the canaliculi, blood-vessels and connective tissue inside of the inelastic capsule. The nephrotomy further permits a copious outflow of blood which not only relieves the kidneys and regulates diapedesis but clears out the obstructions in the tubuli and washes away toxins. Kneading of the kidney may help in this. The incision also permits the calices and pelvis to be rinsed out with a weak antiseptic solution. The drainage, which is indispensable, continues the good work. Nephrotomy thus provides for relief of pressure, antisepsis and drainage, while decapsulation answers only the first of these indications. In three cases of chronic painful nephritis he combined decapsulation and nephrotomy with the best of results. One of these patients has not had the slightest disturbance during the seven years since. He tabulates twenty-four cases of chronic nephritis in which the fatal outcome was postponed by the operation for from two to over fifteen months. The survival was longest in the cases with edema alone; it was less when the edema was accompanied by uremia, and shortest with uremia and oliguria without edema. Sixty-six patients survived to date of writing, eight apparently cured, eleven very much improved, twenty-three much improved and only six showing no improvement. The eight cured cases were in patients with uremia alone, edema plus uremia, edema plus oliguria, or uremia plus oliguria. Very great improvement was observed in eleven cases in these various groups, as also in twenty-three with one of the six types of Bright's disease. The cases showing no improvement were in the groups with edema alone, uremia alone, or both combined. Myocarditis contra-indicates any operation for nephritis as the patient is liable to die suddenly either from the anesthetic or the strain on the organism. On the other hand, hypertrophy of the heart with powerful apex beat and gallop rhythm should urge the operation. By reducing the pressure in the kidney, the task of the heart is rendered lighter. In the total 164 cases of operative measures in nephritis which he has compiled, decapsulation alone was done in 153. Even when the chronic nephritis is not accompanied by severe symptoms but still interferes with ordinary social and business life, he advocates surgical measures after failure of the internal; particularly in that phase of Bright's disease when the urine does not contain much albumin or casts but the urea and the urates are constantly decreasing and there is cachexia manifested by pallor, slight puffiness of the face, fleeting edema of the legs, much weakness, dyspnea on slight effort and low red corpuscle count.

74. **The Kidneys in Eclampsia.**—Zinsser is convinced that the kidneys suffer only secondarily in eclampsia. Measures to act on the kidney hence cannot have an essential influence on the disease although disturbance in the kidney functioning aggravates the general condition. From this point of view the elimination of salt in the urine is important for the prognosis. When the salt content suddenly and continuously drops to a fraction of the normal figure, the prognosis is grave while a medium salt content even with a clinically severe syndrome permits hope of a favorable outcome.

75. **Resection of the Stomach.**—Weil states that during the last five and one-half years 800 operations on the stomach have been done in Küttner's service. In 149 cases this was a typical resection of the stomach. In fourteen cases of callous ulcer one patient died of pneumonia, another of gangrene of the lung and the third of hemorrhage from a second ulcer in the stomach. The remaining eleven patients are entirely well to date; the general health and the functioning of the digestive tract did not seem to be affected at all by the resection of the stomach. Of the 104 patients with cancer who survived the operation and its effects, forty are still living; eight for more than three years. This gives 2 or 3 per cent. permanently cured of the total patients with gastric cancer who were given treatment at the clinic between 1907 and 1909. Comparison with previous decades shows that the number of permanent cures is about the same while the proportion of patients with operable gastric cancer has grown less. Progress can be only along the lines of an earlier diagnosis.

76. **Sequestration of the Blood in Heart Disease.**—Engel gives a number of tracings taken before, during and after the blood had been sequestrated in the arms and legs by compression with two large pneumatic cuffs. The pressure was applied only enough to arrest the venous blood while the arterial blood could still flow into the limbs. The tracings show a remarkable effect on the heart, giving it a chance to rest and recuperate.

77. **Electric Method of Excising Cancer.**—Abel calls attention to the advantage of cutting the tissues with the de Forest electric needle which cuts quicker than the knife and modifies the tissues so that they are coagulated instantaneously, thus closing the blood and lymph vessels as they are cut and hence preventing any absorption into them of cancer-cell tissue. He summarizes his principle in the statement that the carcinoma should be killed before removal, that is, be coagulated through and through with the electric current before we touch it. This diathermy preliminary to the excision lengthens the operation only slightly but it possibly may prove an effectual barrier against recurrence in the wound.

## Deutsche medizinische Wochenschrift, Berlin

*March 6, XXXIX, No. 10, pp. 441-488*

82 *Syphilitic Disease of the Aorta. T. Deneke.
83 Lupus of the Nose. (Schleimhautlupus der Nase.) Walb.
84 *Typhoid Bacilli on the Tonsils. F. and L. Schütz.
85 *Tuberculosis in Childhood. A. de Besche.
86 *Technic for Microscopic Study of Tubercle Bacilli. (Verhütung der mikroskopischen Fehldiagnose der Tuberkelbazillen.) H. Bontemps.
87 *Toxicity of Urine in Acute Infectious Diseases. (Weitere Mitteilungen über die Giftigkeit des Harns bei Masern und anderen Infektionskrankheiten.) H. Aronson and P. Sommerfeld.
88 Local Anesthesia for Operations on Sternum. (Ueber Lokalanästhesie bei Operationen am Brustbein.) H. Harttung.
89 Indications for Arthrodesis. W. Böcker.
90 *Operative Treatment of Nephritis. (Operative Behandlung der Nierenentzündung.) P. Herz.
91 *Latent Erysipelas. S. S. S. Blumenfeld.

82. **Syphilitic Disease of the Aorta.**—Deneke reviews his experiences with 173 cases. About half of the patients admitted syphilis and one had signs of inherited syphilis. The shortest period between infection and the aorta disease was five years; the longest, forty-four years; the average about twenty. No occupation or age seemed to be particularly affected. In fifty-three cases the nervous system was also investigated and disease of the nervous system was evident in 40 per cent. The mortality was large, some of the patients succumbing suddenly, others after a long course of improvements and exaggerations. In forty-six cases under observation for some time, the present condition is unmistakably the more favorable the more vigorous and persevering the specific treatment to which the patients had been subjected. In this group is one workingman of fifty-one who had severe pulmonary edema at first but improved under treatment until he has regained full working capacity. Another patient is a merchant of 38 whose left radial pulse had been imperceptible for years but after several courses of treatment, the pulse returned. This group also includes a number of patients whose previous sickly aspect has changed to that of health as their seriously demoralized myocardium recuperated in surprising fashion. In his service at the public hospital at Hamburg, when inunctions were impracticable he gave Ricard's blend of red mercuric iodid and sodium iodid. With this formula the dosage of mercury is so small that the first course should last three months. He approves of Höfler's method of giving iodid alone when the Wassermann is negative; if positive, he associates mercury with it. Salvarsan cannot be given to patients with serious aortitis and even with good compensation great caution is necessary. Deneke seldom gave over 0.2 or 0.4 gm. and always with other measures at the same time. His personal impression is that a patient with a positive Wassermann on starting treatment is never sure against the progress of his disease until the Wassermann reaction has become permanently negative. This may require years or may never be attained; the best we

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can do then is to order as many courses of treatment as possible. Transient benefit is easy to realize in these cases, but permanent success is difficult. We must impress patients with the seriousness of syphilitic aorta disease and the necessity for vigorous treatment through months and years. The trouble is that the patient feels so much improved under a single course that he is heedless of returning for further treatment and he hears outsiders talk of "injury from mercury," so he does not return for further treatment until irreparable lesions are installed.

84. **Typhoid Bacilli on the Tonsils.**—Schütz examined the tonsils of thirty-seven patients, including twenty-three with unmistakable typhoid. Seventy-one tests were made of smears from the tonsils but typhoid bacilli could not be cultivated from the tonsils in any instance.

85. **Tuberculosis in Children.**—De Besche inoculated animals with material from the lymph-nodes of 134 child cadavers; in 39 per cent. there were clinical signs of tuberculosis. Positive results were obtained in from 24 to 50 per cent., increasing from the first to the fifth years, and in 58.8 per cent. of the children between 5 and 15. In three cases of the fifty-two giving positive findings the bacilli cultivated were of the bovine type; in one of both human and bovine and in forty-five of the human type.

86. **Errors to Avoid in Examining for Tubercle Bacilli.**—Among other points Bontemps gives illustrations of some bacteria-like and acid-proof bodies which simulated tubercle bacilli but which were finally discovered to be scraps from disintegrated lycopodium spores. The newer sputum technics break up these spores very readily. Lycopodium is frequently used to dust pills and it is easily inhaled by druggists handling it or it is ingested with the pills. It is probable that there are other substances which leave detritus resembling tubercle bacilli in the body fluids. Cork cells and honey-comb wax are acid-proof. He urges search for other substances possessing this acid-proof property and liable to mislead in microscopic examination of urine, sputum, blood, milk, etc.

87. **Toxicity of the Urine in Infectious Diseases.**—Further research has confirmed the unusual toxicity of the urine in measles. The standard limit for toxicity is accepted as the fatal action of 2 c.c. of neutralized and warmed urine injected into a vein in a guinea-pig weighing from 180 to 200 gm. The present article reports the findings in 146 cases of various acute infectious diseases with 500 tests on animals. Besides measles, varicella, fourth disease and serum exanthem are accompanied by extremely toxic urine, while scarlet fever is not. This test may be found useful in differentiating scarlet fever.

90. **Operative Treatment of Nephritis.**—Herz has found decapsulation of the kidney or slitting the kidney of great efficacy in kidney colic and essential hemorrhage from the kidney, anuria or uremia, with chronic and acute nephritis, but these operations, although relieving symptomatically, were never known to bring about a cure.

91. **Latent Erysipelas.**—Blumenfeld describes two cases which show that erysipelas may develop in the depths and not reach the surface for several days.

### Jahrbuch für Kinderheilkunde, Berlin

*February, LXXVII, No. 2, pp. 125-241*

92 Elimination of Acetone in Urine of Young Children. (Die Acetonausscheidung im Urin gesunder und spasmophiler junger Kinder.) E. Liefmann.
93 Clinical Availability of Acetone Reaction in Children. (Ueber die klinischen Verwendbarkeit der Acetonreaktion in der Kinderpraxis.) G. von Bitter.
94 Whey in Treatment of Catarrhal Enteritis Resembling Dysentery. (Anwendung der Molketherapie bei ruhrartigen Darmkatarrhen und ihre Erfolge.) E. A. Frank.
95 The Skin Reactions in the Exudative Diathesis. (Hautreaktionen bei Kindern mit exsudativer Diathese.) E. Rachmilewitsch.
96 Rupture of Umbilical Cord. (Ueber Nabelschnurbruch.) W. Usener.
97 Postdiphtheric Facial Paralysis; Recovery Under Antitoxin. (Postdiphtherische Facialislähmung.) S. Wolff.
98 Recurring Mumps. (Wiederholte Erkrankung an Parotitis epidemica.) J. K. Friedjung.

### Medizinische Klinik, Berlin

*March 2, IX, No. 9, pp. 319-356*

99 Internal Anthrax and Workmen's Compensation. (Innerer Milzbrand als Unfallkrankheit.) L. Lewin.
100 *Oxygen Under Pressure in Treatment of Asphyxia in the Newly Born. (Die Sauerstoffdruckatmung zur Bekämpfung des Scheintods der Neugeborenen.) F. Engelmann.
101 *Decapsulation of the Kidney. (Zur einseitigen und doppelseitigen Nierenenthülsung.) M. Penkert.
102 Contagiousness of Latent Syphilis. (Zur Infektiosität der latenten Lues.) M. Müller.
103 Factors Which Enhance Potency of Drugs in Combination. (Ueber wirkungspotenzierende Momente in Arzneigemischen.) W. Heubner.
104 Cure of Woody Phlegmon Under Serotherapy. (Fall von Holzphlegmone mit Antistreptokokkenserum Aronson behandelt.) W. Thedinga.
105 Roentgenoscopy in Diagnosis of Enlarged Bronchial Lymph-Nodes. (Zur Röntgendiagnostik der Bronchialdrüsenvergrösserungen.) S. Engel.

100. **Oxygen in Treatment of Asphyxia Neonatorum.**—For nearly three years Engelmann has been reviving the deeply asphyxiated infants in his service by means of oxygen under slight pressure with a safety valve regulator. A mask fits over the face; the oxygen accumulates in a rubber balloon into which the mask opens. He uses the Tiegel mask for the purpose, one tube bringing the oxygen into the balloon, another tube conveying the excess and the expired air to a metal tube which stands upright in a vial filled with water. By raising and lowering the metal tube the pressure in the entire system is regulated. In many cases the effect of the oxygen was most striking. The child is wrapped in warm blankets and the mask is applied with the lower jaw drawn forward. Then at regular intervals the thorax is compressed with both thumbs, which expels the air while inspiration follows from the forcible entrance of the oxygen under pressure. As a rule, the skin soon grows pink and the child begins to breathe naturally unless there is some injury of the brain from hemorrhage or pressure. In one unusually severe case described at length, no result was obtained for an hour and a quarter; by the end of another fifteen minutes the child was pink and breathing regularly. It died twelve hours later and extensive subdural hemorrhage was found at necropsy. This same method was applied, with a larger-sized mask, to an adult with paralysis of respiration after stovain spinal anesthesia. The apparatus worked finely during the hour required before danger was past. The method might also prove useful in embolism or severe pneumonia. He contrasts the method with Schultze swinging, pointing out its advantages when there are contra-indications to the swinging (premature birth, injury of the brain or fracture). He adds that as we are unable to exclude with certainty complications on the part of the brain in severe cases of asphyxia, it seems wiser to apply this method in every case of severe asphyxia without exception, as the simplest and most harmless means of expanding the lungs and ensuring a regular supply of oxygen.

101. **Decapsulation of the Kidney.**—Penkert reports two cases in which the benefit from decapsulation was most striking after failure of all other internal measures. The first patient was a woman of 34 who had long been under treatment for relics of left perinephritis which had evidently developed from an abscess following an injection of fibrolysin. The decapsulation cured her and there has been no further trouble during the three years since. The second patient had pregnancy nephritis in the severest form with an eclamptic convulsion during delivery and albuminuria over 30 per thousand. After the failure of internal measures, decapsulation of both kidneys, four weeks after delivery, was followed by marked improvement, the albumin dropping from 22 to 1 per thousand, although it rose again temporarily afterward, but it disappeared permanently the third month.

### Monatsschrift für Kinderheilkunde, Berlin

*XI, No. 10, pp. 455-544*

106 Connection Between Face Presentation and Obstetric Paralysis. (Zusammenhang von Gesichtslage und spontaner infantiler Geburtslähmung.) L. Kaumheimer.
107 Manifestations of the Exudative Diathesis in the Mucosa of the Urogenital Apparatus; Forty Cases. C. Beck.
108 Differentiating Reaction in Cow's Milk and Human Milk. (Eine Reaktion zur Unterscheidung von Kuh- und Frauenmilch.) Bauer.

109 Utilization of Gruels in Infants. (Ueber die Ausnützung von Mehl- und Griessbreien beim Säuglinge.) F. Pfersdorff and K. Stolte.
110 Tuberculin in Diagnosis of Tuberculosis in Children. (Zur Tuberkulindiagnostik im Kindesalter.) N. Stricker.

### Münchener medizinische Wochenschrift

*March 4, LX, No. 9, pp. 449-504*

111 *Technic for and Experiences with Operative Treatment of Pulmonary Tuberculosis. (Welche Formen der thorakoplastischen Pfeilerresektion sind je nach Ausdehnung und Schwere der Lungenerkrankung zu empfehlen?) M. Wilms.
112 Derangement of the Knee. (Zur Behandlung der inneren Verletzungen des Kniegelenks.) O. Vulpius.
113 Influence of Thorium X on Seedlings. (Einfluss von Thorium X auf keimende Pflanzen.) F. Kahn.
114 *Prophylactic Serotherapy in Tetanus. K. Kolb and K. Laubenheimer.
115 Technic for Bacteriologic Diagnosis of Diphtheria. (Erfahrungen mit der Conradi-Trochschen Tellurplatte zum Diphtherienachweis.) G. Wagner.
116 *Orthostatic Albuminuria and Tuberculosis. (Ueber orthotische Albuminurie und ihre Beziehungen zur Tuberkulose nach Untersuchungen bei Hautkranken, insbes. bei Hauttuberkulose und Syphilis.) W. Arnold.
117 The Protective Ferments. (Zur Frage der Spezifizität der Schutzfermente.) E. Abderhalden.
118 Injuries of the Toes and Insurance Against Accidents. (Die Verletzungen und traumatischen Erkrankungen der Zehen und ihre Begutachtung in Unfallsachen.) C. Walbel.
119 Modified Technic for Roentgenotherapy. (Vierjährige Erfahrungen mit unterbrecherlosen—Gleichrichter—Röntgenapparaten und einige wichtige Neuerungen an denselben. Zugleich ein Beitrag zur Frage der Apparatbeurteilung durch den Arzt.) F. M. Groedel.
120 Medical Impressions of America. (Hygienisches aus Nordamerika.) R. Müller. Commenced in No. 8.

111. **Thoracoplastic Treatment of Pulmonary Disease.**—Wilms gives a number of illustrations to show the preferable technic for permitting compression of the lung by an operation on the ribs.

114. **Prophylactic Serotherapy of Tetanus.**—Four severe cases of crushing of the hands in a threshing machine came to treatment in the course of five days. Tetanus antitoxin was injected at once and tetanus did not develop in any instance but in one of the cases tetanus germs were cultivated from the wound. There seems to be little doubt that the prophylactic injection must have actually warded off tetanus in this case. There is a similar case in the literature in which a fire-arm wound of the orbit contained tetanus bacilli but no tetanus developed after the prompt serotherapy.

116. **Orthostatic Albuminuria and Tuberculosis.**—Arnold examined forty-four patients with chronic tuberculous disease of the skin, eight with psoriasis and thirty-three with syphilis to determine the prevalence of orthostatic albuminuria in these conditions. The findings were negative in the cutaneous affections but in early and still untreated syphilis orthostatic albuminuria was encountered almost as frequently as in the early stages of tuberculosis. The discovery of orthostatic albuminuria is therefore not to be regarded as a sign of incipient tuberculosis unless syphilis can be excluded. He adds that orthostatic albuminuria seems to be the manifestation of a chronic infection or intoxication and is not of specific import.

### Petersburger medizinische Zeitschrift

*February 28, XXXVIII, No. 4, pp. 43-55*

121 Treatment of Sinusitis. (Zur Behandlung der eitrigen Erkrankungen der Nebenhöhlen der Nase.) A. von zur Mühlen.
122 Sexual Fetishism. V. Nordmark. Commenced in No. 3.

### Therapeutische Monatshefte, Berlin

*March, XXVII, No. 3, pp. 177-256*

123 Treatment of Gonorrhea and Its Complications. C. Bruck.
124 Medicinal Treatment of Cardiac and Renal Dropsy. (Ueber Kombinationswirkung von Medikamenten bei der Behandlung der Herz- und Nierenwassersucht.) H. Strauss.
125 *Castor Oil in Appendicitis. (Zur Rizinusbehandlung der Blinddarmentzündung.) Sorge.
126 Indications for the Wearing of a Monocle Instead of Spectacles. R. Halben.
127 Salts from Mineral Waters. (Ueber Quellprodukte.) O. Rössler.
128 Experimental Organotherapy. (Ueber die Wirkung von Pituitrin und Histamin an der isolierten Gebärmutter.) H. Fuhner.
129 Reform in Advertising Medicinal Articles. (Wünsche zur Reform des Arzneivertriebes.) J. Herzog.

125. **Castor Oil and Appendicitis.**—Sorge states that in his experience the cases with perforating lesions in the appendix were invariably those in which castor oil had been taken not long before, nearly all the patients asserting that soon after taking the castor oil the pains had set in with great intensity. He gives the details of ten such cases out of a much larger experience and emphasizes the importance of caution in giving laxatives even when the case does not suggest actual appendicitis. It is particularly imperative to beware of danger from this source in the country, where hospitals are not so easy of access. In a hospital, castor oil may be given to confirm the diagnosis in chronic and subacute cases. If the condition becomes aggravated, an operation is indicated at once.

### Wiener klinische Wochenschrift, Vienna

*February 20, XXVI, No. 8, pp. 281-316*

130 *Psychotherapy for Children. (Ueber psychische Behandlung im Kindesalter.) F. Hamburger.
131 *Dyspnea from Spasmodic Contraction of the Musculature of the Bronchi in the Spasmophilic Diathesis. (Ein noch nicht beschriebenes Krankheitsbild der spasmophilen Diathese.) R. Lederer.
132 Vital Transformation of Structure of Transplanted Fascia. O. M. Chiari.
133 Lipoids in the Urine. (Ueber ein Phosphatid im menschlichen Harn.) L. Hess and B. v. Frisch.
134 The Meiostagmin Reaction. (Verwertbarkeit der Azetonextrakte bei der Meiostagminreaktion. S. Zarzycki. (Zur Meiostagminreaktion.) R. Köhler and A. Luger.
135 *Disturbances from Adhesions Following Pleurisy. (Entstehung und Bekämpfung der konsekutiven Störungen bei Pleuraschwarte.) L. Hofbauer.

130. **Psychotherapy for Children.**—Hamburger is privatdocent for children's diseases at Vienna and has a service in the policlinic. His experience has convinced him that psychotherapy can be advantageously applied even to very young children in cases of neurasthenia resulting from a sense of injustice. Feelings wounded by real or fancied unjust treatment may in some children bring on actual neurasthenia. The neurasthenia in this case is amenable to psychotherapy as the causal treatment. Psychanalysis by the Freud method and efforts to wean the little patient away from brooding over his injury are the main reliance. Suggestion can be successfully applied to children 2 years old and upward; it may succeed in correcting abnormal conditions even during sleep, but it is particularly useful, he states, for the psychogenic complications and aggravation of organic affections. Here it serves to sift out the psychogenic disturbances from those of organic origin

131. **Dyspnea from Spasm of Bronchial Musculature.**—Lederer has sometimes noticed in children with a tendency to spasmophilia disturbances in breathing, especially dyspnea during expiration. It generally proved fatal, in one case in twelve hours, in another in four days. There were signs of spasm of the larynx or general convulsions in some, and death occurred during these attacks or the children slowly suffocated to death, with the heart growing weaker. He has never seen a description of this slow type of fatal tetany. Dulness over the lungs and râles suggested pneumonia which had aroused the spasmophilia, hitherto latent in some of the cases, or that the spasmophilia had become complicated with pneumonia. Necropsy, however, showed the lungs free from all tendency to pneumonia, but atelectasia was pronounced at various points and emphysema at others. Examination of fifty-eight children with spasmophilia during the last year revealed this tendency to atelectasia in six. In two of the cases this was the only sign of the spasmophilia. The only plausible explanation of these findings is the assumption of spasmodic contraction of the smaller muscles of the bronchi. This would close the lumen of the bronchi, thus shutting off the alveoles from intake of air; the air already in them is absorbed, and atelectasia results.

135. **Disturbances from Pleural Adhesions.**—Hofbauer remarks that the general health may and often does suffer from the immobilization of the diaphragm by the adhesions and other changes left, as well as from the functional paralysis of the diaphragm liable after a pleurisy. Both the respiration and circulation suffer, and every effort must be made to correct conditions. He gives reasons and diagrams to explain the benefit from exercises to promote absorption and from lying on the

affected side, not the sound side. The diaphragm in these conditions is better able to make normal excursions on the lower side as the patient lies on this side. Another useful aid is in deep breathing exercises, breathing from the abdomen as the patient stands with the arms akimbo on the sound side, the other arm held out horizontally. During a slow deep inspiration the patient bends his trunk over on the sound side, raising at the same time the other arm straight over his head. He must breathe through his nose exclusively. To enhance the effect the trunk is twisted as he bends over. This exercises the thorax, the aim being to stretch and mobilize the intercostal spaces and the diaphragm. The hip of the sound side is the pivot on which the trunk is twisted. The outcome of these exercises has been excellent in his experience, as he shows by a typical case, described at length, in a boy of 13.

### Zentralblatt für Chirurgie, Leipsic

*March 8, XL, No. 10, pp. 337-376*

136 Paralysis of the Diaphragm After Anesthesia of Brachial Plexus. (Phrenicuslähmung bei Plexusanästhesie.) R. Sievers.

137 Local Anesthesia for Appendicectomy. (Die Anästhesierung der rechten Darmbeingrube bei der Operation der chronischen Appendicitis.) H. Fowelin.

138 Tincture of Iodin for Mucosa in Gastro-Intestinal Operations. (Zur Frage der Schleimhautjodierung bei Operationen am Magen-Darmtrakt.) J. Hohlbaum.

### Zentralblatt für Gynäkologie, Leipsic

*March 8, XXXVII, No. 10, pp. 329-368*

139 Pituglandol Retards Delivery. (Zur Wirkung des Hypophysenextraktes.) F. Lieven.

140 *Reflex Tenderness with Inflammation of Female Genital Organs. (Reflektorische Schmerzempfindungen bei Druck auf den Plexus coeliacus bei entzündlichen Erkrankungen der weiblichen Geschlechtsorgane.) M. S. Alperin.

140. **Pain in Diagnosis of Inflammatory Conditions.**—Alperin comments on the way in which the subjective symptoms are usually neglected in favor of the objective. Snegirew has long been teaching the clinical importance of pain in gynecology, and Alperin in his service has made a special study of this subject in 309 cases. His method was to press with the index finger the umbilicus back to the spine as the patient lay on her back. Some of the women said as this was done it caused pain radiating to the stomach region, others to the pubis, others to the inguinal region, others to the sacrum, while others said that there was no pain except from the direct pressure of the finger. The statements in regard to the radiating pain were classified and compared with the diagnosis of conditions in the pelvic organs. It soon became evident that this radiation of the pain corresponded to certain specific abnormal conditions in the genital organs. When the pain radiated toward the epigastrium, the inflammatory process was concentrated in the uterine mucosa; toward the symphysis, in the peritoneum surrounding the uterus; when toward the inguinal region on one or both sides, the inflammatory process was in the adnexa; toward the sacrum, there was inflammation or venous hyperemia in the muscular tissue of the uterus. When there was no pain except under the finger, no trace of inflammatory processes could be found in the genital organs. In only 12 per cent. of the total 309 cases did the findings fail to confirm the information derived from the radiation of the pain. It seems evident that the pain is caused by the overfilling of the blood-vessels, while this distention of the blood-vessels is the result of abnormal conditions in the special innervation. As illustrations of this are cited the familiar facts that pain is sometimes felt in the eyes with sudden suppression of menstruation, and that the pain of dysmenorrhea can be relieved by painting with cocain the congested points in the lower turbinate bone. The pressure of the vessels on the nerves causes the pains, and soothing this spasm of the vasomotors restores normal conditions in the blood supply. Alperin gives the details of a few cases in which the findings were apparently contradictory, as in a case in which the pain radiated both to the stomach and pubis. According to his classification this would indicate inflammation in both the endometrium and perimetrium, but in reality the perimetrium alone was inflamed and the uterine mucosa was apparently sound. Study of the former history, however, revealed that there had been endometritis not long before, with leukorrhea. In another case the pain radiated to the left inguinal region; this would indicate disease in the left adnexa, but in fact there was merely an inflammatory process in the cervix and the case was recorded as contradictory. But here again the case history showed an inflammatory process in the left inguinal region after a long preceding childbirth. An interesting point is that in five cases with left salpingitis the pain radiated to both inguinal regions; this suggested that the inflammation had already spread to the other tube although there was nothing otherwise to suggest this at the time. We know that disease of one tube is frequently followed by involvement of the other; Kannegiesser has confirmed this on animals: Ligating and infecting one tube were soon followed by a similar infectious process in the other tube, conveyed probably by the lymph stream. Alperin presses his finger inward and a little upward, trying to reach the process at the 2—3 lumbar vertebra, where the sheath of the solar plexus lies. The patients were asked to describe the pain if they felt any, without suggesting any region, and each examination was done with the patient lying on her back, the legs flexed at hip and knee, the abdomen freed from all bands, and the test was applied by three physicians in turn to prevent any influence from the personal equation.

### Zentralblatt für innere Medizin, Leipsic

*March 8, XXXIV, No. 10, pp. 241-264*

141 Myositis from Excessive Use of Group of Muscles Involved (Traumatische Myositis.) H. Rotky.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*February 27, XXXIV, No. 25, pp. 257-264*

142 Iodin for Sterilization of Skin. (Contributo clinico-statistico alla disinfezione della pelle con tintura iodica.) C. Gaetano.

*March 4, No. 27, pp. 281-288*

143 *Early Diagnosis of Pulmonary Tuberculosis. B. Nicola.

143. **Early Diagnosis of Pulmonary Tuberculosis.**—Nicola reviews his experience at the Turin preventorium where all the various methods for diagnosing have been systematically applied in hundreds of cases. The methods found most useful were Goldscheider's threshold percussion and the albumin reaction in the sputum—which was found constantly negative in simple bronchial catarrh and positive in chronic inflammatory conditions in the lungs and in cardiorenal insufficiency in over 200 applications of the test. He regards negative findings as excluding tuberculous infection. Other diagnostic measures found useful were the skin reaction (Pirquet), the intradermal reaction, and the subcutaneous test for adults, and Pottenger's method of systematic palpation.

### Policlinico, Rome

*March 2, XX, No. 9, pp. 289-328*

144 *Radiotherapy of Cancer. (La Röntgenterapia degli epitelliomi cutanei.) G. Scaduto.

144. **Roentgenotherapy of Superficial Cancers.**—Scaduto thinks that there is no necessity for histologic distinctions between epitheliomas, but that it is important to distinguish between the superficial ones and those burrowing deep. He emphasizes the importance of excising the outer layers of the epithelioma so as to permit the rays to act on the deeper cancerous elements, which are the most dangerous from the point of view of recurrence. The best means of warding off recurrence is by periodical exposures to the roentgen rays, kept up indefinitely every forty or sixty days for years.

### Riforma Medica, Naples

*February 8, XXIX, No. 6, pp. 141-168*

145 Experimental Immunization by the Mouth Against Cholera. (Immunizzazione delle cavie col nucleoproteide del vibrioni colerigeni per la via gastrica.) V. de Bonis and P. Natale.

146 General Anesthesia by Intramuscular Injection of Ether. (Breve nota su di un caso di anestesia generale per mezzo di injezioni intramuscolari di etere.) G. Giordano.

147 Transient Albuminuria (Albuminuria transitoria determinata dalla separazione intravesicale delle urine.) L. Cocco.
148 Resistance of Arteries to Suppurative Processes. G. Palazzo. Commenced in No. 3.

*February 15, No. 7, pp. 169-196*

149 Pulsating Effusion with Pleurisy. (A proposito di un caso di pleurite destra, bloccata, pulsante.) T. Silvestri.
150 *Reduction of Abnormally High Arterial Pressure by Roentgen Exposures of Adrenals. (Contributo clinico alla radioterapia delle ghiandole surrenali in alcuni stati ipertensivi.) C. Quadrone.

*February 22, No. 8, pp. 197-224*

151 Vitality of Cholera Germs in Contact with Acids. (Vitalita del vibrione del colera a contatto con gli acidi.) D. Pane.
152 Kala-Azar in Southern Italy. (Leishmaniosi interna—kala azar—a Messina. Nuovi esempi clinici e sguardo riassuntivo.) G. Spagnollo.
153 Technic for Removing Gall-Stones in Common Bile Duct. (Per la coledocolitotomia transpancreatica.) G. Morone. Commenced in No. 7.

**150. Effect on Blood-Pressure of Exposure of Adrenals to Roentgen Rays.**—Quadrone reports further research in this line. His previous conclusions were confirmed by the negative results from roentgenotherapy in nephritis reported last year by Galausino (Abstr. in THE JOURNAL, Feb. 17, 1912, p. 525). This showed that the kidneys were not sensitive to Roentgen exposures, so Quadrone ventured to apply the rays systematically to the adrenals in five cases of permanently high blood-pressure. In four of the five patients the blood-pressure was materially reduced and the subjective condition much improved but no appreciable influence was apparent on morbid conditions in the heart and kidneys. His experiences confirm the reduction in the blood-pressure which is possible by exposures of the adrenals where previously the adrenals had been functioning to excess. The epinephrin disappeared from the blood after the exposures. His findings confirm in every respect those reported by Zimmern last year on the reduction of the blood-pressure under radiotherapy of the adrenals. They also confirm Decastello's report of the changes in the adrenals after exposures to the Roentgen rays. Of course it is only in a comparatively small proportion of the cases of excessive blood-pressure that excessive functioning of the adrenals is responsible for the hypertension. The finding of epinephrin in the blood suggests the possibility of this and explains the benefit from the exposures. Zimmern obtained a more or less pronounced reduction in the blood-pressure in fifteen of the sixteen patients thus treated.

## Semana Medica, Buenos Aires

*February 6, XX, No. 6, pp. 305-368*

154 The Brownian Movements are Due to Microorganisms. A. L. Herrera.
155 Measurement of Hearing Capacity. (Acumetria. Sonidos extramusicales y limite superior acustico. Monocordio Struycken.) M. J. Rizzi.
156 Chemical Study of Ozone and of Water. (Apuntes de quimica.) V. Delfino.

## Hospitalstidende, Copenhagen

*March 5, LVI, No. 10, pp. 249-272*

157 Manometer for Therapeutic Artificial Pneumothorax. (En ny Manometeranordning ved Pneumothoraxbehandling.) C. H. Würtzen.
158 Research on Secretion in the Stomach During Digestion. I. (Undersøgelser over Ventrikelsekretionen under Fordøjelsens Forløb. I.) J. P. Gregersen. Commenced in No. 9.

## Norsk Magazin for Lægevidenskaben, Christiania

*March, LXXIV, No. 3, pp. 289-440*

159 *Pathogenesis of Blood-Borne Skin Disease. (Bidrag til belysning av de hæmatogene dermatosers særlig erythema nodosums patogenese.) E. Bruusgaard.
160 Further Research on Pepsin. (Nyere mavesaftundersøkelser.) A. O. Haneborg.
161 Diplococci Found in Gasserian Ganglion in Case of Herpes Zoster of the Brow in Senile Dement. (Herpes zoster frontalis med bakteriefund i ganglion Gasseri.) A. Sunde.
162 Quack Practices and Tuberculosis. (Kvaksalveri mot tuberkulose.) S. Schmidt-Nielsen.
163 Fracture of Posterior Process of the Heel Bone. (Om brud av proc. posterior tali.) H. Wille.
164 *Relations Between Appendicitis and Gynecologic Disease. (Appendicit i forhold til gynækologiske lidelser.) H. Natvig.

**159. Pathogenesis of Blood-Borne Skin Disease.**—Bruusgaard reports two cases of nodose erythema in which the primary essential element was evidently inflammation in the subcutaneous tissue in or around a vein. There was a history of acute articular rheumatism in one and of syphilis in the other case. He knows of only two cases on record in which bacteria were found in the nodules. The data presented seem to show that nodose erythema belongs to the group of affections due to an attenuated pyemia. Bacteriologic and histologic research as early as possible is the only means to decide the question definitely and Bruusgaard urges early excision of a nodule for examination, especially in the cases complicated with serous effusions and joint troubles.

**164. Appendicitis in Connection with Gynecologic Disease.**—Natvig insists that appendicitis is far more frequent in women than is generally recognized, and that it often causes exclusively symptoms apparently of genital origin. It is also liable to induce functional and organic morbid conditions in the genitals as he shows by a number of striking examples. On the other hand, primary genital affections often involve the appendix. The abdominal route is preferable to the vaginal for operations on the genitals as it permits oversight of conditions in the appendix region. Incision on the median line is more instructive than in the side for appendicectomy as the genital organs can be examined better. He also advocates a laparotomy rather than the classic technic for the Alexander-Adams operation. He always removes the appendix when operating on the internal genitals if there is anything in the aspect of the appendix or the history of the case to suggest that the appendix is not entirely sound. Pankow found signs of appendicitis in 66.66 of 150 women under treatment for gynecologic disease. Petterson found unmistakable signs of it in about 50 per cent. of several hundred gynecologic patients. Other statistics are cited to show the frequent coincidence and the connection between lesions in the appendix and internal genitals. Riedel has reported sixteen cases of severe peritonitis in virgins developing from some genital process, but presenting in every respect the typical picture of peritonitis from perforating appendicitis. Natvig reports a similar case in a girl of seventeen apparently entirely well until symptoms of fatal perforation peritonitis developed suddenly. The laparotomy revealed that the appendix was sound and that the trouble originated in the tubes. There is no need to waste time in trying to differentiate between appendix and genital disease; the operation should include both in its possible scope. Natwig reviews his own experience, giving the details of twenty-four of the more instructive cases, salpingitis or displacement simulating acute or chronic appendicitis, habitual abortion or sterility from appendicitic adhesions, tubal pregnancy due to the same anomalies, thrombosis, myoma complicated with pains from chronic appendicitis, associated appendicitis and tubal pregnancy, etc.

## Ugeskrift for Læger, Copenhagen

*February 27, LXXV, No. 9, pp. 363-400*

165 The Changes in the Red Corpuscles in Progressive Anæmia. (Forandringer i de røde Blodlegemer ved progressive Anæmier.) L. Melchior.

*March 6, No. 10, pp. 401-438*

166 Connection Between the Presence of Body Lice and of Pigmented Areas on the Skin. (Notice historique sur les taches bleuatres—taches ombrées—des morpions.) Ehlers.

## Upsala Läkareförenings Förhandlingar

*XVIII, No. 3, pp. 121-188. Last indexed February 1, p. 408*

167 Mercury Refound in Air and Dust of Rooms Where Mercury is Handled. (Untersuchungen über das Vorkommen von Quecksilber in der Luft und in dem Staube in einigen Unterrichts- und Dienstlokalen, in denen mit Quecksilber hantiert wird, sowie im Harne der dort beschäftigten Personen.) A. Blomquist.
168 Study of the Pulse and Blood-Pressure in Children Between 6 and 14. (Några iakttagelser angående utvecklingen af puls och blodtryck under den senare barnaåldern.) R. Friberger.
169 Influence of Certain Colloids (Saponin and Cholesterin) on Action of Enzymes. (Några kolloida substansers inflytande på hämningen af enzymverkan.) G. J. Biohm.